

# The IRON AGE

August 8, 1957

The National Metalworking Weekly



"Total Packaging" —

How It Helps

Boost Sales P. 39

Mill Equipment Makers  
Sharpen Price Pencils — P. 124

Boron Rids Steels  
Of Stretcher Strains — P. 79

Digest of the Week P. 2-3



**Hoskins**

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**Wire, ribbon, rod and strip for electrical resistance, thermo-electric and mechanical-purpose applications**

When it comes to developing and producing custom quality alloys for electrical resistance, thermo-electric, and specialized mechanical purpose applications, you'll find that Hoskins has what it takes to meet your most critical requirements. Complete metallurgical research and development facilities, for one thing. Modern melting and processing equipment, for another. More important, though, is an abundance of human talent... people who have the experience, the know-how, and a sincere desire to deliver exactly what you want when and where you want it. *Try them and see!*

**ALLOY 815-R:** A new iron-chromium-aluminum alloy developed especially for use on precision resistor applications. Possesses high resistivity and low temperature coefficient of resistance, plus high strength, excellent ductility, and stability over a wide temperature range.

**CHROMEL-C:** A 60-16 nickel-chromium-iron alloy widely used in small heating appliances and cold resistors where high resistances are required within limited space. Its stability and uniformity minimize design variables, permit more efficient production of better units at lower cost.

**CHROMEL-ALUMEL:** The most accurate and most durable base metal thermocouple alloys ever developed. Made exclusively by Hoskins, they are the accepted standards for controlling heat treating operations up to 2300°F, and for measuring temperatures of jet aircraft engines.

**ALLOY 46:** A gas-free nickel-iron alloy developed especially for use as a terminal material for power resistor units. It is readily "wetted" by enamel to produce a good bond, and its coefficient of expansion is very similar to that of enamels used for such applications.

**CHROMEL-D:** A time proven low nickel heating element alloy for controlled atmosphere furnace applications. Highly resistant to sulphur attack and preferential intergranular oxidation, it gives long-life service in the critical temperature range between 1500° and 1800°F.

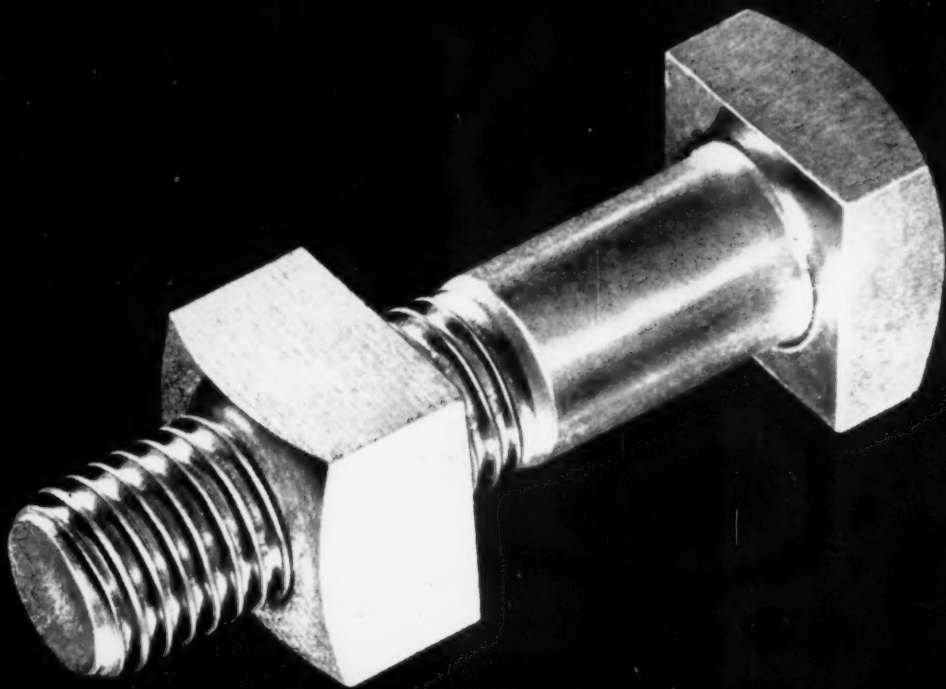


**Life in a Vacuum**—The special vacuum atmosphere life-test equipment shown above was designed and built by Hoskins for use in developing new heating element alloys which will give improved performance and dependable, long-life service in vacuum atmosphere heat treating equipment.

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The Bethalume process produces an unusually uniform coating, ensuring clean threads for good fit.

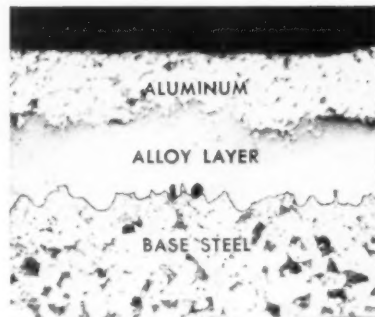
## Bethalume Coating Gives Fasteners Better Resistance to Corrosion

Fasteners used in corrosive atmospheres have a much longer service life, and require little or no maintenance, when protected by Bethlehem's Bethalume coating—a hot-dip coating of pure aluminum.

The Bethalume coating is effective in enabling fastener items to withstand the effects of corrosive atmospheres because it adds the permanence of aluminum to the

strength of steel. The coating is tightly bonded to the base steel, and is uniform over the entire surface of the fastener. The coated threads are clean and smooth-fitting.

Why not look into the advantages of the Bethalume coating for your fasteners applications? A telephone call to the nearest Bethlehem sales office will bring one of our representatives to your desk promptly.



Photomicrograph of Bethalume coating. Pure aluminum is bonded to base steel by iron-aluminum alloy.

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# BETHLEHEM STEEL



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# THE IRON AGE

August 8, 1957—Vol. 180, No. 6

## The Digest of the Week in

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Have One 7

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### NEWS ARTICLES

#### DEFENSE CUTS

**Belt Tightening** — Defense Sec.  
Wilson says defense ordering will  
be cut by \$1.5 billion in fiscal year  
ending June 30. He sets spending  
limit of \$38 billion. P. 43

#### MORE BERYLLIUM

**New Plant** — Beryllium Corp.  
starts up first privately-owned plant.  
Brush Beryllium spends \$4.5 mil-  
lion for major plant expansion. AEC  
takes most of new output. Future  
for the metal in industry looks  
bright, but fabricating difficulties  
are stumbling blocks. P. 45

#### 2nd QUARTER EARNINGS

**Generally Downward** — The  
weaker steel market brought de-  
clines in second quarter earnings of  
many producers. However, a strong  
first half showing and hopes for the  
fourth quarter lead to tempered op-  
timism about '57. P. 48

#### THE LABOR PRESS

**What Does It Print?**—For the  
most part, union publications have  
come a long way. A larger share  
of space is given over to articles that  
help workers improve their skills.  
This is especially true in craft un-  
ions' papers. P. 44

#### AUTO LABOR

**More Pay vs Short Hours**—Spec-  
ulation grows that Walter Reuther

# Metalworking



might be using the threat of a shorter workweek as a lever to get higher pay for autoworkers. There is some evidence he is hedging in his public remarks. P. 56

## TAX CUTS IN '58

**Congress Considers Them** — Despite frowns from the Administration, Congressional leaders are talking about across-the-board tax cuts next year. Slashes in individual taxes could be voted, but there's little hope for drop in corporate rates. P. 61

## FEATURE ARTICLES

### FOR NON-AGING STEELS

**Add Boron**—Within a few years, deep drawing operations will no longer be plagued with the problem of stretcher strains. The reason: Low cost boron additions will eliminate strain aging in alloys of commercial composition. P. 79

### HEAVY WELDING

**Speed With Special Fixtures** — Automatic welding machines are achieving high welding speeds on heavy assemblies. It's not just the speed of the welding heads that accounts for the success. It takes special equipment to handle the unwieldy parts. P. 82

### PLANT MAINTENANCE

**A System That Works** — One measure of maintenance efficiency

is production. Another measure: Doing a thorough job with relatively few craftsmen. It's a matter of preventing trouble in equipment and remedying it quickly. P. 84

### FERRITIC NODULAR IRON

**How to Check Quality**—Here is data for setting up acceptability standards on this widely used grade of nodular iron. It's the results of a study made of three factors: Chemical composition microstructure, and X-ray soundness. P. 88

### SHOT BLAST TREATMENT

**For Coil Stock**—A continuous shot blast line is displacing batch-operating pickling tanks for surface preparation of hot-rolled sheet steel. The coil sheet attains high quality and uniformity. P. 92

## MARKETS & PRICES

### ELEPHANT TOOLS

**Deliveries Speeded Up** — Lead times for elephant tool orders have been cut 15-20 pct, two principal builders report. It may renew government interest in heavy machinery stockpiling. P. 42

## NEXT WEEK

### TREPPANNING

**Boring With A Bonus** — The method creates a solid core, not a pile of chips. Not only does the trepanning bar get high cutting speed, but the runout is negligible. Next week's feature brings out the details of this invaluable method.

**GOOD PACKAGING:** The battle for sales is getting tougher. Good packaging, advises Gerald Stahl, a leading industrial design consultant, can be a potent tool in the race to beat out competition. He uses wide experience to prove the power of a good package. P. 39

## NEW LEAD MARKET

**Porcelain Enameling** — A lead base frit is used to porcelainize aluminum because of the low melting point. Lead industry hopes to use this advantage to sell the idea to steel. P. 46

## CHAINS SAWS

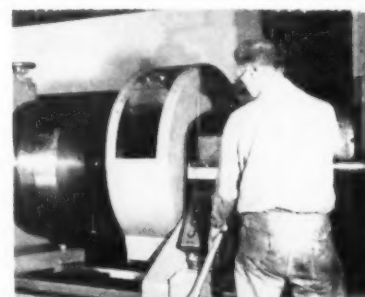
**They're Selling Fast** — Within five years, one-man chain saws have mushroomed into a \$40 million business. The market is far from saturated. New lightweight alloys are the big boosters. P. 47

## AIRCRAFT PRODUCT MIX

**Changes Are Due** — The West Coast will produce fewer airplanes, more missiles as a result of shift in Pentagon's thinking. Stretch-outs, cutbacks and cancellations in aircraft production seem likely. P. 63

## STEEL TENTER HOOKS

**The Price Hearings**—Mills are edgy this week. They're gearing up for the steel price hearings in Washington. And they're wondering how strong 3rd and 4th quarter upturn in demand will be. P. 123





## STAINLESS STEELS AND CORROSION RESISTANCE

The best stainless steel tubing for a specific application cannot be identified by surface appearance alone. The answer is found in the grain structure because the corrosion resistance of any given grade of stainless steel depends on heat treatment.

And constant testing is the only way to prove a material's ability to beat the many different types of corrosive attack... as B&W men like Mike Landman, who checks corrosion resistance of B&W Stainless Tubing, know. And the entire team of B&W technicians—inspectors, furnace operators, metallurgists, engineers and chemists—know that constant checking is an integral part of the complete production cycle.

Generations of experience are built into every foot of B&W Stainless Tubing. The end result assures long service life—the most corrosion resistant tubes for your particular process industry application. The Babcock & Wilcox Company, Tubular Products Division, Beaver Falls, Pa.



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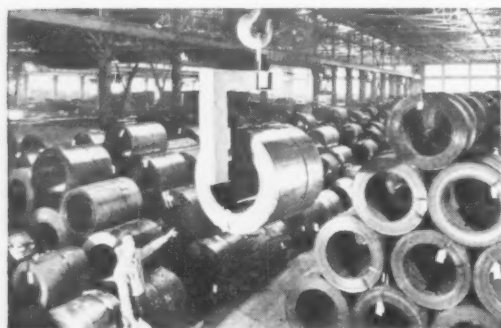
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# 3 important check points on steel suppliers

*for the buyer with  
a management viewpoint*



In 1917 Ryerson already had 75 years of steel-service experience



A small part of the huge steel stocks at one Ryerson plant



Spark testing Ryerson bar stocks to avoid mixed steels

**DEPENDABILITY AND EXPERIENCE**—Is your company establishing a sound business relationship with a supplier of steel from stock who will be willing and able to furnish steel at fair prices next year or five years from now under all market conditions? And is your company dealing with a supplier who can give you the benefit of experience gained in working with tens of thousands of other companies whose problems of steel purchasing, selection and fabrication may be similar to yours?

The supplier with the broadest experience is Ryerson—the nation's largest steel-service organization with a 115-year record of dependable performance.

**CAPACITY TO SERVE**—Consider this recent example: It was 10 after 5 P.M. The phone rang and a steel buyer 80 miles away said: "I've got to have 60,000 lbs. of slit coils first thing in the morning." Impossible? Not at Ryerson. The needed steel was on hand in Ryerson stocks—the nation's largest, by far. Unequalled processing equipment was put to work. And during the night coils of two different gauges were slit to size requirements. Early the next morning the steel was delivered as promised—80 miles away. This kind of service takes great capacity—and Ryerson has it.

**QUALITY OF PRODUCT**—Mislabelled steel cannot pass skilled Ryerson inspectors who "read" steel sparks to determine carbon content and alloying elements with amazing accuracy. And spark testing is typical of the exacting attention given to quality control at Ryerson. As a result you are sure of getting the third important requisite of satisfactory steel service—steel of known, uniform high quality, accurate in size, gauge, length and weight, and right for your particular application.

*In stock: Carbon, alloy and stainless steel—bars, structurals, plates, sheet and strip, tubing, reinforcing steel—aluminum, industrial plastics, metal-working machinery, etc.*



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# Indispensable Person – Lucky You If You Have One

Maybe this is daydreaming. Then again perhaps it's possible. Some day it may happen to you. You will get help from the indispensable person.

This is the person who is worth his weight in gold. He runs with the ball and stops just before you are ready to tackle him.

In times of stress when you let go with all your pent-up exasperations he considers the source—but he knows why too.

When there seems to be no credit coming to you because of your position, this person registers approbation without the semblance of wanting something for himself.

This he or she also knows you for what you are and spends little time catering to something that isn't there. This is known as "being understood." It's the real thing.

Your indispensable person is a mind-reader. He knows what you want without a lot of palaver. Chances are he has anticipated you quietly. It is not necessary to try to explain.

This favorite of ours takes off your shoulders the disagreeable things that you can do but don't want to do. And he or she does it without a stricken martyr-complex showing.

This sought-after person never notices when you fall completely on your face. He often makes things appear as if you threw a ringer instead of tossing a dud.

And when things get really tough you don't find this imaginary person putting a lot of roadblocks in your way. You are not reminded by even a sigh that you aren't the kind of a leader you see when you look into the mirror.

When you reverse yourself so swiftly that you insist it is a very new idea, this indispensable person does not remind you that you are inconsistent. He or she never noticed it at all.

When you demand that the truth be told; that you be criticized straight from the shoulder, you get it—but kindly. And not with an unholy glee that belies its honesty and charity.

And when you despair of ever doing the right thing, of ever making the grade and of ever living up to your own standards, your "friend" won't go along with you. You feel his support and help. It is your face that is saved.

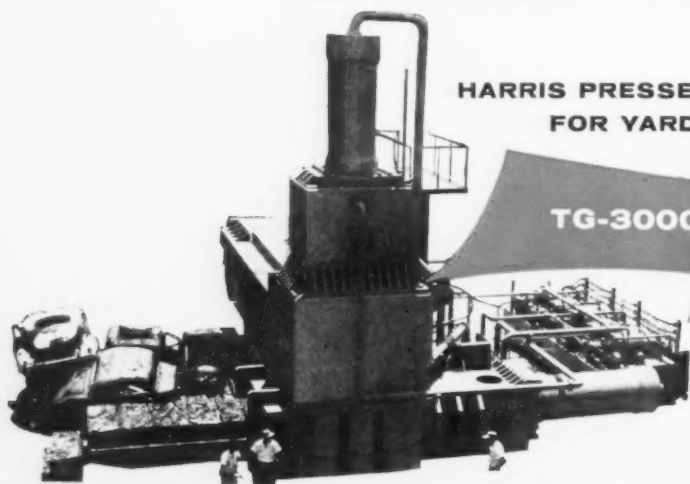
So you think this is daydreaming. Don't fool yourself. Somewhere near you every day is this indispensable person. Take some time, recognize who he or she is; then be thankful!

*Tom Campbell*

Editor-in-Chief

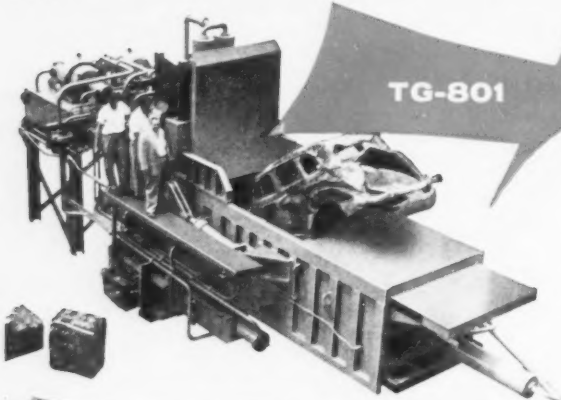
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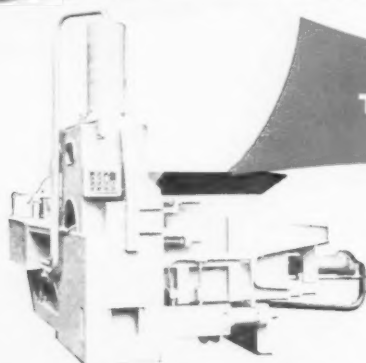


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## LETTERS FROM READERS

### Social Conscience

Sir—I have read your editorials for quite some time and feel that you really have your finger on the pulse of the steel industry. Your July 25 editorial "Social Conscience—Is It Being Overworked" was, to my mind, one of your best.

If you have no objection to the editorial so being used, I would appreciate you sending me four copies so that I may mail them to the senators and representatives from the State of Ohio.—T. H. Wallace, Plant Mgr., Inland Steel Container Co., Greenville, Ohio.

■ We're happy to give you our permission.—Ed.

Sir—My congratulations on your editorial in the July 25 issue, which in my opinion is splendid.

No one can possibly take offense.—G. P. Thomas, Pres., Thomas Machine Mfg. Co., Pittsburgh, Pa.

### Fast Analysis

Sir—In the July 4 issue, your Newsfront page cites a new direct reading spectrograph that will analyze alloys in seconds.

Can you fill us in on the manufacturer, location, and so on? A unit like this, if not too expensive, could work wonders in this business.—W. S. Story, Director of Public Relations, Institute of Scrap Iron & Steel Inc., Washington, D. C.

■ For further information write the International Electronics Corp., 1551 Franklin Ave., Mineola, N. Y.—Ed.

### Tax Man Calls

Sir—I have just read with a great deal of interest the article, "What To Do When The Tax Man Calls on You," in the July 25 issue of THE IRON AGE.

Having served as Commissioner of Internal Revenue since Decem-

ber, 1955, I feel that I am in position to assure the readers of your worthy journal that Agent Robert S. Weinreb, whose efficiency and understanding while carrying out his official duties inspired this complimentary story, is typically representative of the men and women who administer the nation's tax laws.

**Accurate Appraisal**—Needless to say, I am pleased over your pleasant experience with Agent Weinreb. It is always gratifying to have favorable "customer reaction," but in this instance it is doubly good, for you have gone to the trouble of accurately appraising, for the benefit of your readers, the audit function of the Revenue Service and the agents who administer it.—R. C. Harrington, Commissioner of Internal Revenue, U. S. Treasury Dept., Washington, D. C.

### Machining

Sir—We would like to circulate your fine Metalworking Dollar Series article on "Machining" in the July 25 issue through our engineering group and through our machine shop. Therefore, we ask you to kindly send us as many reprints as you can.—F. Zotti, Pres., Steel and Alloy Tank Co., Newark, N. J.

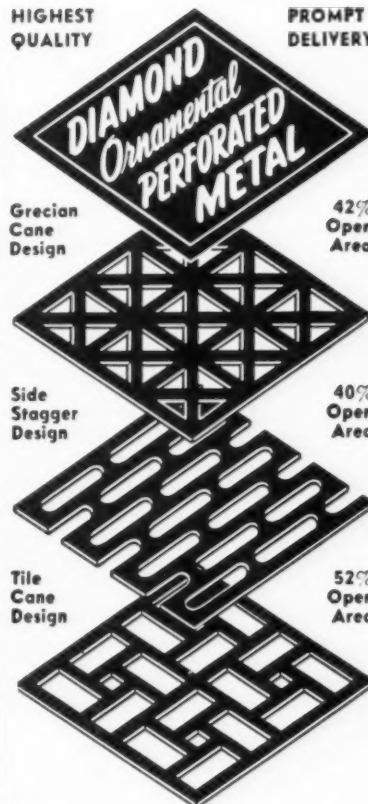
■ A few copies are still available.—Ed.



"I don't care where you're from, Mac, ya gotta wear safety glasses in here."

HIGHEST  
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## Need Holes in Metal Sheets?

Several considerations must usually be observed. The design should be attractive in appearance, with adequate open area, while still, for some purposes, affording suitable concealment of what lies behind or underneath.

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Catalog 39 shows many interesting applications and contains complete illustrated working data. No charge or obligation, but kindly state business connection.

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## FATIGUE CRACKS

### Strategist

Gerald Stahl, author of this week's cover article on "total packaging" (see p. 39), is one of the younger of America's leading industrial designers. In a short time he has acquired a wide reputation for the highly successful design programs he and his associates have created for a long list of well-known corporations.

**Set New Standards**—Many of these design programs have helped



Designer Stahl at work.

to establish new standards in product design, package design, and marketing.

Dramatic corporate identity programs, some of which are discussed in his article (Jones & Laughlin, Nichols Wire and Aluminum, American Chain and Cable, and Behr-Manning) are gaining the attention of top industry leaders as a new direction in marketing strategy.

### New Series

This week we're introducing a brand new series of technical articles on steelmaking.

We're calling it "Better Steelmaking"—a name that fits like a glove. Because what we intend to report

in this series is not simply what's new or unusual in steelmaking. What we're really after is what's significant and really important to the metalworking industry.

**Easy To Follow**—To start the series with a bang, we've chosen the subject of boron additions intended to eliminate stretcher strains in steel. Whether you prefer your technical articles "long hair" or "crew cut," we think this is an article that has something to say—and says it in a way that a lot of people can understand.

The subject's a "must" for everyone who does deep drawing or ever plans to. So just stretch over to p. 79 and start reading.

### It Happened!

Just in case you were wondering who the three gentlemen were on the front cover of last week's issue, we'll let you in on the secret. Of course we're a week late getting around to it, but those pesky journalistic gremlins caught up with us while we were day-dreaming about that coming vacation at the shore. Hope the boss doesn't decide to make it permanent.

In the picture below, reproduced from last week's cover, are (left to right): R. T. Eakin, works manager, Brackenridge Works, Allegheny Ludlum Steel Corp.; C. A. Seaman, chief electrical engineer at Brackenridge Works, and Herbert Newcomer, electrical engineer, Brackenridge Works.



YOUR ORDER  
FOR



POUND...  
OR



will be consistently uniform in dimensions and engineering properties if it's ---

### PENNROLD precision strip

Beryllium Copper  
Phosphor Bronze  
Nickel Silver

Brass  
Chromium Copper  
Stainless

(incl. 17-7 P H)  
Invar

Nickel Iron Alloys

0.0005 in. to 0.040 in. thick  
0.090 in. to 6 in. wide

Some immediately available. Others rolled to order in 2 to 21 days. Can be supplied in coils or straight lengths with slit or filed edges — also cadmium plated.

# PENN

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## **Bearings, Inc. customers . . . are the best "price buyers" in business!**

Take this steel mill as a good example. The Superintendent of Mechanical Maintenance and the Master Mechanic shown above talking to our sales representative, buy many bearings at competitive prices from Bearings, Inc. every year. By using our services to their fullest extent . . . By accepting the knowledge of Bearings, Inc. engineers, they get a "value added" that makes their bearing purchases far less expensive than can be supplied by most other distributors.

Here are some of the services Bearings, Inc. is continually performing for this mill:

- An original survey, made before a new rod mill went into operation, catalogued each of the 8,000 bearings in the mill as well as oil seals and bronze bushings. A weekly recap keeps the inventory up to date.
- Reducing duplication and elimination of bearings no longer needed through periodic checks.
- Suggesting methods which have improved quality of product, lessened maintenance costs and lengthened machinery life.
- Conducting educational meetings among plant workers, showing them how they may cut maintenance costs.
- Re-wrapping stock to keep out dirt.

- Availability for consultation about plant problems. A telephone call will bring the Bearings, Inc. man in a hurry if the problem cannot wait until his regular call.

- Helping set up a preventive maintenance system enabling this steel mill to find potential breakdowns before they happen.

- Relocating stockrooms for greater efficiency.

- Standardizing bearings wherever possible.

*Most of our customers know and use these services.*

*A call to our nearest branch will make them available to you!*

*Providing bearing service in the territories  
adjacent to our branches, listed below.*

## **BEARINGS, INC.**

**OHIO:** Akron • Canton • Cincinnati • Cleveland • Columbus • Dayton • Elyria

• Hamilton • Lima • Mansfield • Toledo • Youngstown • Zanesville

**INDIANA:** Ft. Wayne • Indianapolis • Muncie • Terre Haute

**PENNSYLVANIA:** Erie • Johnstown • Philadelphia • Pittsburgh • York

**WEST VIRGINIA:** Charleston • Huntington • Wheeling

**NEW JERSEY:** Camden • **MARYLAND:** Baltimore

**DELAWARE:** Wilmington •

**Subsidiaries:** Balanrol Corp. • Buffalo, N. Y. •  
Kentucky Ball and Roller Bearing Co. • Louisville, Ky.



## EXHIBITS, MEETINGS

**Packaging & Handling Show**—Oct. 28-31, Atlantic City. (SIPMHE, One Gateway Center, Pittsburgh 22.)

**AtomFair '57**—Oct. 28-31, New York. (Atomic Industrial Forum, 3 E. 54th St., N. Y. 22.)

**Metal Show**—Nov. 2-8, Chicago, (American Society for Metals, 7301 Euclid Ave., Cleveland 3.)

### AUGUST

**Society of Automotive Engineers**—West Coast meeting, Aug. 12-15, Olympic Hotel, Seattle. Society headquarters, 485 Lexington Ave., New York.

**American Institute of Electrical Engineers**—Pacific general meeting, Aug. 28-30, Chinook Hotel, Yakima, Wash. Society headquarters, 33 W. 39th St., New York.

### SEPTEMBER

**National Metal Trades Assn.**—Eastern plant management conference, Sept. 8-11, Essex-Sussex Hotel, Spring Lake, N. J. Society headquarters, 337 W. Madison St., Chicago.

**American Mining Congress**—Metal mining and industrial minerals convention, Sept. 9-11, Hotels Utah & Newhouse, Salt Lake City, Utah. Society headquarters, 1200 18th St., Washington, D. C.

**Instrument Society of America**—12th annual instrument-automation conference and exhibit, Sept. 9-13, Cleveland Auditorium, Cleveland. Society headquarters, 313 Sixth Ave., Pittsburgh.

**National Petroleum Assn.**—Annual meeting, Sept. 11-13, Traymore Hotel, Atlantic City. Society headquarters, 958 Munsey Bldg., Washington.

**Marking Device Assn.**—National meeting, Sept. 19-20, Roosevelt (Continued on P. 16)

THE IRON AGE, August 8, 1957

**Specify Michigan Tubing for economy and versatility**

*The ABC of M'SIT*

**A Quality Product**

**ROUND**

1/4" to 4" O.D. 7 to 22 gauge

**SQUARE** Gauge **RECTANGULAR**

3/8" to 3/4" 16 thru 22 3/8" minimum side to 5" maximum side

3/4" to 1" 11 thru 20

1" to 2" 11 thru 18

2" to 3" 11 thru 18

**Carbon 1010 to 1025**

**Standard Sizes**

Tube Diameter O.D. Size	Maximum Wall Decimal	BWG Gauge	Minimum Wall Decimal	BWG Gauge
1/4	.065	16	.022	24
1/4	.083	14	.022	24
1/2	.095	13	.022	24
3/8	.095	13	.022	22
3/8	.095	13	.028	22
1/2	.095	13	.028	22
1/2	.095	13	.028	20
1/2	.095	13	.035	20
1/2	.095	13	.035	20
1/2	.120	11	.035	20
1/2	.120	11	.035	20
1/2	.120	7	.035	20
1/2	.180	7	.035	20
2	.180	7	.035	20
2 1/4	.180	7	.035	20
2 1/4	.180	7	.035	20
2 1/4	.180	7	.035	20
2 1/4	.180	7	.035	20
2 1/4	.180	7	.035	19
2 1/4	.180	7	.042	19
3	.180	7	.042	19
3 1/4	.180	7	.042	18
3 1/4	.180	7	.049	18
3 1/2	.180	7	.049	18
3 1/2	.180	7	.049	18
3 1/2	.180	7	.049	18
4	.180	7	.049	18

**Michigan STEEL TUBE PRODUCTS CO.**

*THE OLDEST NAME IN ELECTRIC RESISTANCE WELDED STEEL TUBING*

**Consult Michigan**  
for engineering and technical help in the selection of tubing best suited to your needs.

40 Years in the Business  
**9450 BUFFALO • DETROIT 12, MICH.**  
Factories: Detroit, Michigan • Shelby, Ohio

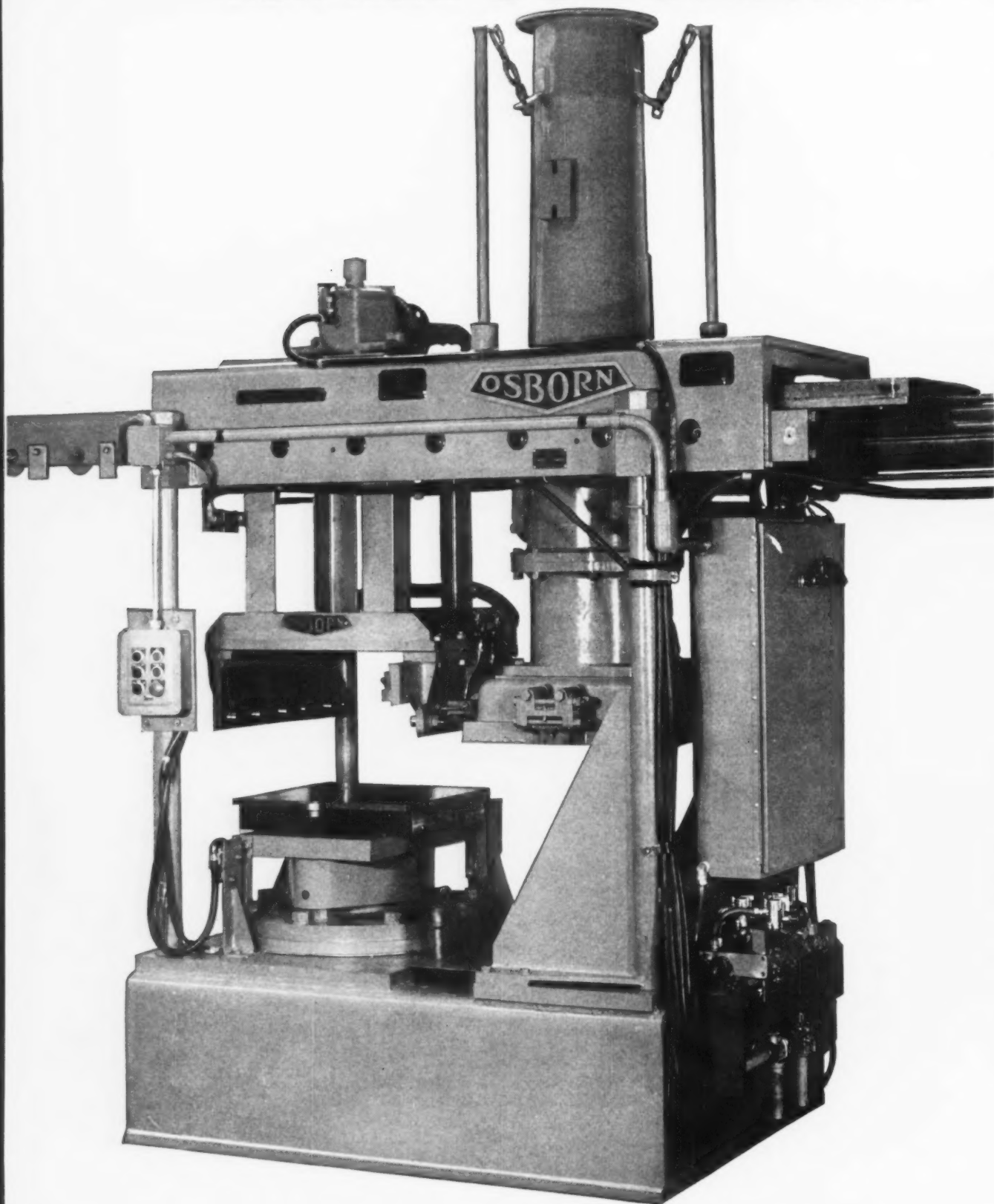
**DISTRIBUTORS:** Steel Sales Corp., Chicago, St. Louis, Milwaukee, Indianapolis and Minneapolis—Miller Steel Co., Inc., Hillside, N. J.—Service Steel Div., Van Pelt Corp., Los Angeles, Calif.—Donald A. Harston, Cleveland, Ohio—Globe Supply Co., Denver, Colo.—W. A. McMichael Co., Upper Darby, Pa.—William P. Hall & Associates, Dayton, Ohio—John Emery West, Miami, Florida—Gary A. Osborne, Buffalo, N. Y.—Earle M. Jorgensen Co., Houston, Texas

## For 40 years

Michigan has been manufacturing tubular parts for leading manufacturers. This acceptance of Michigan tubing has been won by meticulous attention to customer requirements and the supplying of the very best in tubing. The following advantages of low cost manufacture and utmost dependability are yours when you specify Michigan for tubular parts in the fabrication of your products:

1. It is fabricated in round, square and rectangular shapes, in a wide range of sizes;
2. It is always of uniform strength, weight, ductility and weldability;
3. It can be flanged, expanded, tapered, swaged, beaded, upset, flattened, forged, spun closed, fluted and rolled.
4. Complete facilities for the COLD DRAWING, ANNEALING and TESTING of tubing we manufacture.

new from **OSBORN**....



# Molding Machine

for automatic production  
of top quality molds



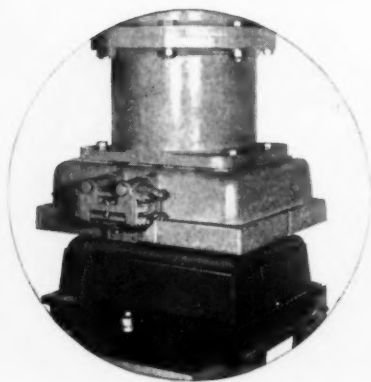
**Economical for wide range of work—** Whether you have short run, medium or high quantity production, you can profit from this newest Osborn development.

**Fast Simple Clean Operation—** Molds of unexcelled quality are produced with simplest skills... on preset time cycles. Operator simply loads empty flasks.

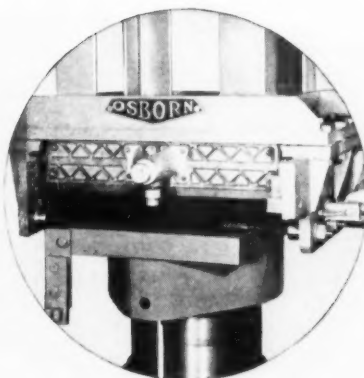
**Quality Duplicated on Every Mold—** A predetermined volume of sand blown into a preform cavity is squeezed into a flask

and the pattern stripped automatically. Resulting intimate contact between sand and pattern assures superior casting finish. Mold density is uniform, sand spillage is negligible.

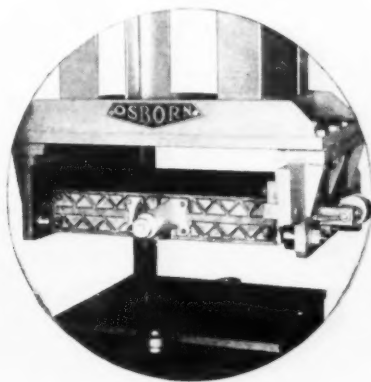
**How You Can Benefit Now—** Have an Osborn representative study your molding needs. Without obligation, he will show you where this new Osborn machine fits into your molding operations. Write us. *The Osborn Manufacturing Company, Dept. FF-58, Cleveland 14, Ohio.*



**Blow—**Sand is blown into preform cavity.



**Squeeze—**Preform is raised and squeezed into flask.



**Strip—**Pattern is stripped from mold.



... leader in mechanization for the foundry



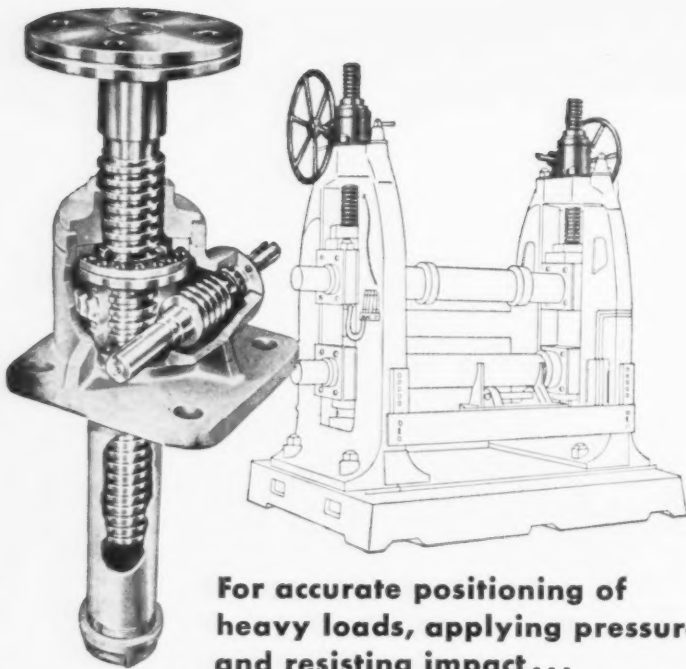
MOLDING MACHINES

CORE BLOWERS

INDUSTRIAL BRUSHES

BRUSHING MACHINES

SHELL MOLDING MACHINES



**For accurate positioning of heavy loads, applying pressure and resisting impact...**

## Duff-Norton Worm Gear Jacks

Duff-Norton worm gear jacks provide a purely mechanical means for accurately positioning loads weighing up to several hundred tons and maintaining them indefinitely without creep. They may be incorporated into the design of a new piece of equipment, or installed in existing facilities to replace other positioning devices. They will operate in any position, and functioning as components of machinery or equipment, worm gear jacks can raise or lower loads, apply pressure, or resist impact.

Capacities range from five to 50 tons. When two or more are connected by means of shafting and mitre gear boxes to raise loads they lift in unison—even when the load is unevenly distributed. Worm gear jacks are available with standard raises up to 25 inches, and will maintain an exact raise through years of service without adjustment. Each of the six sizes has a standard worm gear ratio ranging between  $6\frac{3}{4}:1$  and  $32:1$ . They are made with either square or Acme threads, and give one inch raise for from 10 to 48 turns of the worm. Jacks are suitable for operation at ambient temperatures as high as  $200^{\circ}\text{F}$ .

Thousands of worm gear jacks are in use on feed tables, tube mills, welding positioners, pipe cut-off and threading machines, loading tables, rolling mills, conveyor lines, arbor presses and numerous other types of equipment. To learn how they can improve the performance of your equipment and save you money, write for bulletin AD-34-CC or ask for a Duff-Norton representative to call.



# Duff-Norton Jacks

**DUFF-NORTON COMPANY**

P. O. Box 1889 • Pittsburgh 30, Pennsylvania

**COFFING HOIST DIVISION:** Danville, Illinois

Ratchet Jacks, Screw Jacks, Hydraulic Jacks, Special Worm Gear Jacks,  
Ratchet Hoists, Electric Hoists, Load Binders, Spur Gear Hoists

## EXHIBITS, MEETINGS

Continued from P. 13

Hotel, New Orleans. Society headquarters, 912 Chicago Ave., Evanston, Ill.

**Steel Founder's Society of America**—Fall meeting, Sept. 23-24, The Homestead, Hot Springs, Va. Society headquarters, 606 Terminal Tower, Cleveland.

**The American Society of Mechanical Engineers**—Fall meeting, Sept. 23-25, Statler Hotel, Hartford, Conn. Society headquarters, 29 W. 39th St., New York.

**Standards Engineers Society**—Sixth annual meeting on standardization—economy through application Sept. 23-25, Hotel Commodore, New York. Society headquarters, P. O. Box 281, Camden, N. J.

**Assn. of Iron & Steel Engineers**—Annual convention, Sept. 23-26, Penn Sheraton Hotel, Pittsburgh. Society headquarters, 1010 Empire Bldg., Pittsburgh.

**American Hot Dip Galvanizers Assn.**—Semi-annual meeting, Sept. 26-27, Netherland - Hilton Hotel, Cincinnati. Society headquarters, 1806 First National Bank Bldg., Pittsburgh.

## OCTOBER

**The Electrochemical Society**—Semi-annual meeting, Oct. 6-10, Statler Hotel, Buffalo. Society headquarters, 216 W. 102nd St., New York.

**American Institute of Steel Construction**—35th annual meeting, Oct. 6-11, Hotel del Coronado, Calif. Society headquarters, 101 Park Ave., New York.

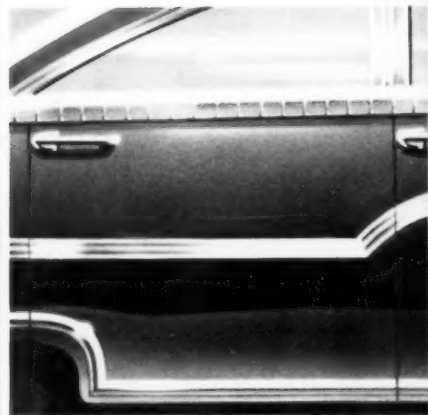
**American Society of Lubrication Engineers**—Fourth conference, Oct. 7-9, Royal York Hotel, Toronto, Ont., Canada. Society headquarters, 84 E. Randolph St., Chicago.

**Committee on Vacuum Techniques**—Fourth annual symposium on high vacuum technology, Oct. 9-11, Hotel Somerset, Boston. Society headquarters, Box 1282, Boston.



On CARS, too... "handsome is  
as handsome does"...

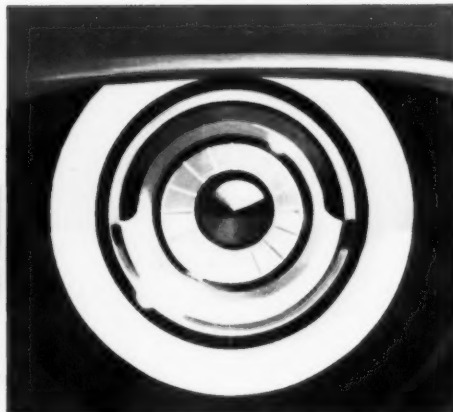
here's how  
beautiful **Stainless Steel**  
does a car-saving job for you



stainless moulding protects body paint from  
rubs and scrapes



stainless trim makes weatherproofing  
permanently attractive

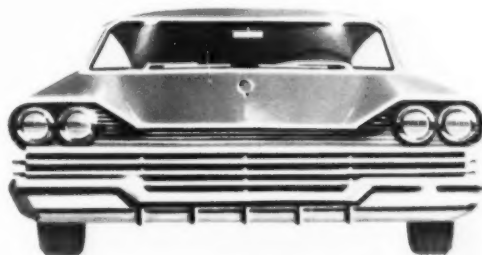


stainless wheel covers resist abrasion, stones and  
road chemicals



stainless provides solid protection for easily-marred  
decorative panels

and...  
stainless brightens  
the entire car  
for life!



Superior Stainless Steel

**Superior Steel**  
CORPORATION  
CARNEGIE, PENNSYLVANIA

Give your Workers BOTH

# Respiratory and Facial Protection

This Easy, Practical Way!



## **AO R2000 RESPIRATOR with R18 FACE SHIELD**

The R2000 Respirator you know about — it's industry's preferred single cartridge respirator that gives you eight respirators in one basic face piece to handle a multitude of dusts, fumes and mists — singly and in combination.

The R18 is a highly adaptable face shield specifically designed for wear with the R2000. Light in weight, durable, easy to attach, it protects eyes and upper face against frontal attack of flying particles. Window is plastic or cellulose acetate .020" thick. Outer edges are protected by vinyl plastic binding for longer shield life. Shield may be worn over regular safety prescription glasses.

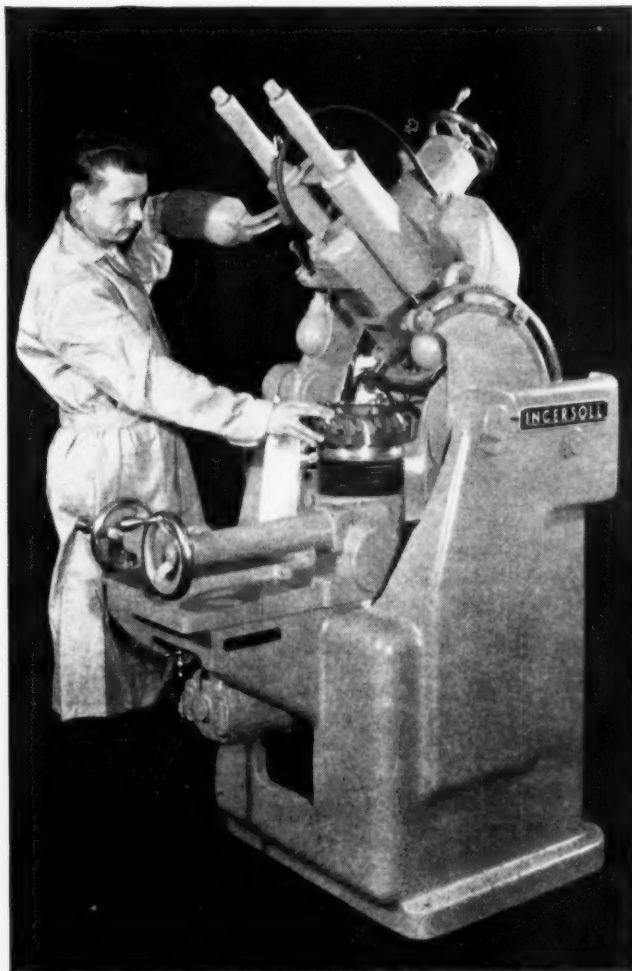
Recommended wherever comfortable DOUBLE protection is desired such as in light chipping, light grinding, light scraping, polishing, painting. Your nearest American Optical Safety Products Representative can supply you.

*Always insist on AO Trademarked Safety Products*

**American Optical**  
COMPANY  
SAFETY PRODUCTS DIVISION

**SOUTHBRIDGE, MASSACHUSETTS**  
BRANCHES IN PRINCIPAL CITIES

***want to check  
your  
cutter grinding  
costs?***



The Ingersoll Cutter Grinder is Standard Equipment for  
Low Cost Sharpening of Inserted Blade Cutters.

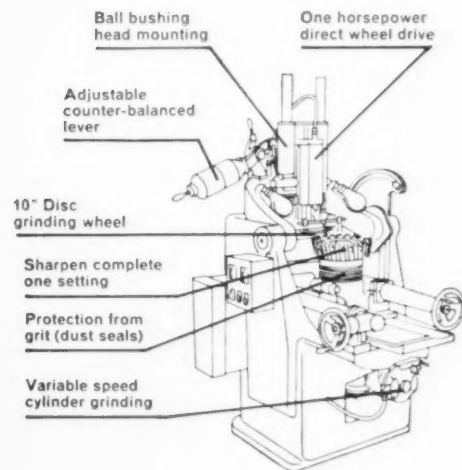
Let us sharpen one of your typical inserted blade cutters. This free demonstration, on a new Ingersoll Cutter Grinder, will tell you what you can expect to save, by replacing standard tool grinders or Ingersoll grinders of obsolete design with new Ingersoll machines.

Accurately ground cutters assure time and dollar savings, longer tool life, better tool and machine performance.

Write for shipping instructions—for a Grinding Cost Check-up.

**Ingersoll Cutter Grinder—for a money  
saving investment of about \$5,000<sup>00</sup>  
(with normal accessories)**

4" to 30" Diameter Cutters. Accuracy is assured. Grinds both periphery and face in one setting. Simple and easy to operate. Faster than Universal Grinders. Grinds a constant clearance.



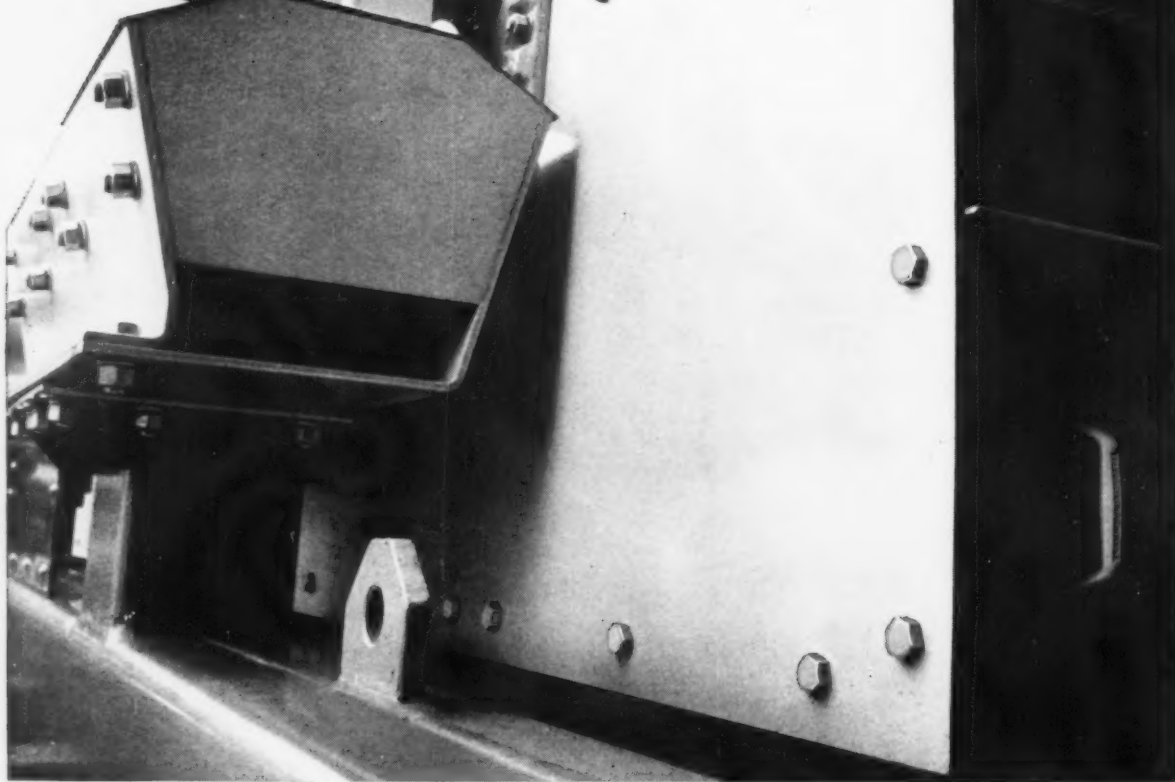
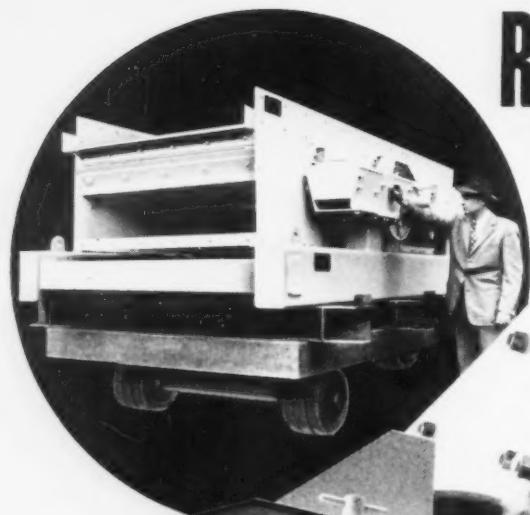
*This 48-page book includes valuable grinding practice "do's and don'ts". Send for your copy today.*

**CUTTER DIVISION  
THE INGERSOLL MILLING MACHINE COMPANY**

ROCKFORD

ILLINOIS

# Republic Cap Screws



FINAL ASSEMBLY OF MAJOR COMPONENTS on Ty-Rock Vibrating Screens uses fine-thread cap screws of several different steel analyses, depending on particular application. The W. S. Tyler Company finds this construction distributes loads better and eliminates danger of fatigue failure due to vibration and cyclic loading. Republic Cap Screws have proved more than equal to every requirement.

# REPUBLIC



*World's Widest Range of Standard Steels*



# Protect Shaker Screen Performance

Sorting and sizing ton after ton of jolting, jarring, abrasive material is all in a day's work for Ty-Rock Vibrating Screens, built by The W. S. Tyler Company of Cleveland, Ohio. Satisfactory performance under these brutal conditions requires not only design and manufacturing skill, but a thorough knowledge of materials.

For example, Tyler has studied all types of fasteners and techniques to determine the best method of assembling heavy components. Experience has proved Republic Cap Screws more than a match for this rugged application. The clamping force produced by these strong, precision fasteners withstands both severe vibration and dynamic loading without stretching or danger of

fatigue failure. The result is year-in, year-out dependability of Tyler equipment, plus easy replacement of particular parts subject to extreme abrasion.

Maximum performance under all operating conditions is typical of Republic's complete line of top-quality cap screws. Types include Hex Head, Flat Head, and Fillister Head in a wide range of sizes. All are available with either coarse or fine threads in high carbon, heat treated steel and low carbon, bright steel—plus many analyses of alloy steel and Enduro<sup>®</sup> Stainless Steel. All have finished points and full-size bodies.

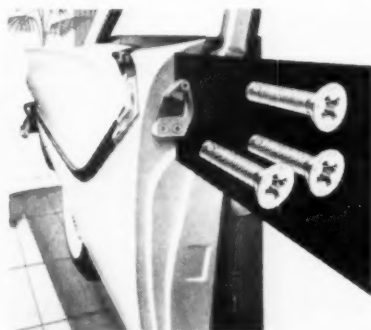
For complete information on Republic Cap Screws, contact your local Republic office. Or mail coupon for data.



**INVENTORY CONTROL PERFORMANCE** in this spring manufacturing plant was vastly improved by replacing outdated equipment with these Republic Bar Carrier units. Also, the new system requires only one-quarter as much space. Republic produces a broad line of standard materials handling equipment. Or special types can be provided as needed. Send coupon for details.



**OUTSTANDING PERFORMANCE OF ELECTRUNITE<sup>®</sup>** Welded Steel Tubing under a wide variety of fabricating operations is demonstrated by this gas range venturi burner tube assembly. It has been bent, crimped, punched, notched, and welded. Uniform physical and metallurgical properties of ELECTRUNITE withstand this severe forming without rupture or collapse. For full information, send coupon.



**PERFORMANCE OF THIS SAFETY DOOR LATCH** is protected by Republic Nylok<sup>®</sup> Bolts. They adjust to permit precise positioning of striker plate. Nylon pellet imbedded in bolt forces tight metal-to-metal lock between opposite threads, whether or not fastener is seated. Striker plate is permanently positioned to assure proper operation. Send coupon for facts.

# STEEL

*and Steel Products*

## REPUBLIC STEEL CORPORATION

DEPT. C-4396

3104 EAST 45TH STREET • CLEVELAND 27, OHIO

Please send further information on:

- ☐ Cap Screws
- ☐ Nylok Bolts
- ☐ ELECTRUNITE Mechanical Tubing
- ☐ Materials Handling Equipment

Name \_\_\_\_\_ Title \_\_\_\_\_

Company \_\_\_\_\_

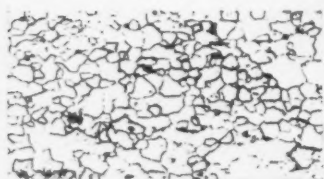
Address \_\_\_\_\_

City \_\_\_\_\_ Zone \_\_\_\_\_ State \_\_\_\_\_

# SHORT RUNS or HIGH PRODUCTION



Conical shapes, spun and drawn from Type 430Ti stainless steel discs, require intermediate annealing to remove work-hardening effects. Annealing follows both spinning and deep-drawing operations. This elevator-type Gradation furnace, occupying only 4 ft by 4 ft floor space, processed 20 pieces per hour.



When production capacity of 120 pieces per hour was desired, Selas designed and built this continuous furnace. The space-saving 16-foot long chamber heats cones to 1600 F; a cooling tunnel delivers workpieces at less than 350 F for convenient handling. Both shapes are accommodated interchangeably without furnace adjustment and, as in the original elevator-type furnace, only one operator is required to load and unload. Same metallurgical structure (shown at left 500X) is obtained with both methods.

## ... SELAS builds heat processing equipment to meet your specific needs

- When production requirements were low, Selas designed and built an elevator-type furnace for a leading metal fabricator to anneal stainless steel conical shapes.

Then, as demand for his product grew beyond the capacity of the elevator-batch-type furnace, Selas de-

signed and built a continuous, automatic tunnel furnace which increased his output six-fold.

Both furnaces use fast, precise Gradation<sup>®</sup> heating to achieve metallurgical uniformity within each part and from part to part.

*Whatever your requirements—short runs or high production, batch or continuous operations—you are invited to discuss them with our engineers. Write for informative articles on Selas heat processing. Address Dept. 19.*

**SELAS**  
CORPORATION OF AMERICA  
DRESHER, PENNSYLVANIA

*Heat and Fluid Processing Engineers*  
DEVELOPMENT • DESIGN • CONSTRUCTION



*Designed and built by . . .*

# UNITED

**4-HIGH 4-STAND  
TANDEM BRASS MILL**



# UNITED

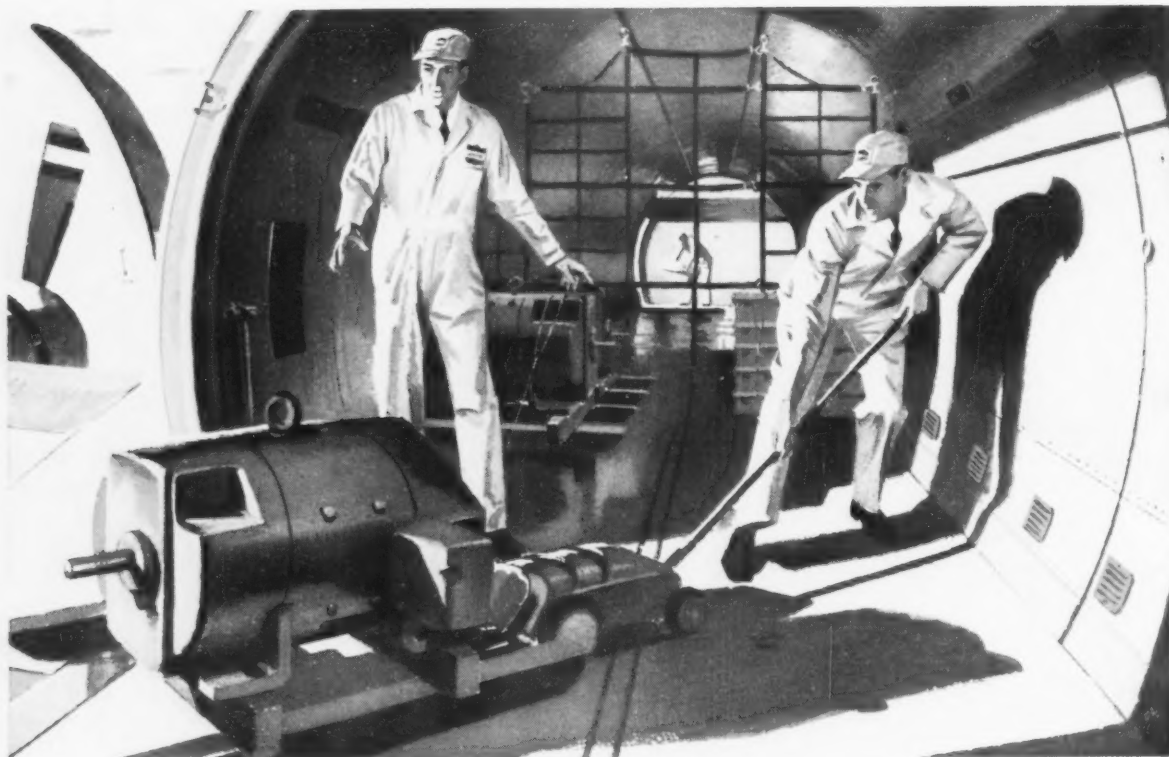
**ENGINEERING AND FOUNDRY COMPANY  
PITTSBURGH, PENNSYLVANIA**



Plants at Pittsburgh, Vandergrift, Youngstown,  
Canton, Wilmington  
SUBSIDIARIES: Adamson United Company, Akron, Ohio  
Stedman Foundry and Machine Co., Inc., Aurora, Indiana

Designers and Builders of Ferrous and Nonferrous Rolling  
Mills, Mill Rolls, Auxiliary Mill and Processing Equipment,  
Presses and other heavy machinery. Manufacturers of Iron,  
Nodular Iron and Steel Castings and Weldments.

# Why use a \$14<sup>25</sup> crate where a \$2<sup>50</sup> skid will do? Ship United!



By taking full advantage of United Air Freight economies, you *save on shipping charges*.

For example: Skid and a crate for this 300-lb. electric motor would cost \$14.25. Shipped by expedited surface carrier from New York to San Francisco, total cost is \$83.49. Shipping time: 4 to 6 days.

By United Air Freight, the same motor requires skid only (\$2.50). Total cost of shipment is \$52.30. Shipping time: 24 to 36 hours.

And consider these advantages—DC-7 Mainliner flights and 30,000-lb.-capacity DC-6A Cargoliners coast to coast. Reserved Air Freight (guarantees the space you need on the flight you want), single simplified airbill, other United "firsts."

## Examples of United's low Air Freight rates

per 100 pounds\*

CHICAGO to CLEVELAND . . . . .	\$4.78
NEW YORK to DETROIT . . . . .	\$5.90
DENVER to OMAHA . . . . .	\$6.42
SEATTLE to LOS ANGELES . . . . .	\$9.80
PHILADELPHIA to PORTLAND . . . . .	\$24.15
SAN FRANCISCO to BOSTON . . . . .	\$27.00

\*These are the rates for many commodities. They are often lower for larger shipments. Rates shown are for information only, are subject to change, and do not include the 3% federal tax on domestic shipments.



**Door-to-door service**

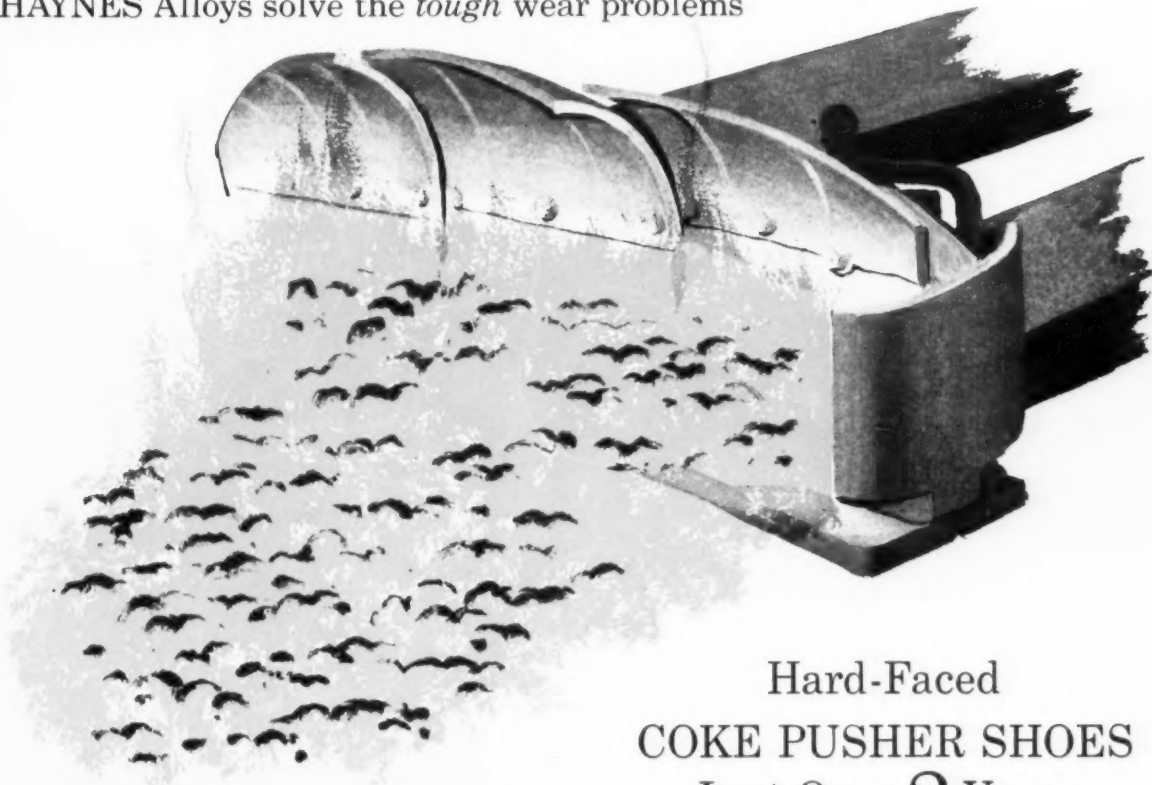
**SHIP FAST...SHIP SURE...SHIP**

For service, information, or free Air Freight booklet, call the nearest United Air Lines Representative or write Cargo Sales Division, United Air Lines, 36 South Wabash Avenue, Chicago 3, Illinois.





HAYNES Alloys solve the *tough* wear problems



## Hard-Faced COKE PUSHER SHOES Last Over 2 Years



These shoes, hard-faced with HAYNES STELLITE alloy No. 1, resist abrasion from the coke particles and the lining of the oven floor. The hard-faced deposit does not chip or spall under the thermal shock of returning from 1800 deg. F., in the oven, to ordinary atmospheric temperatures.

Resisting severe abrasion, heat, and thermal shock produced by riding over the coke-covered floor of 1800-deg. F. ovens—these shoes hard-faced with HAYNES STELLITE alloy No. 1 lasted over two years. Ordinary steel shoes wore out in two months.

Whatever your wear or abrasion problem, there is a HAYNES hard-facing alloy especially made to combat it. There are 18 HAYNES hard-facing alloys... a wide selection that assures economical protection from the most severe conditions of heat, corrosion, erosion, or wear. For the complete story write for descriptive literature or contact our nearest sales office. HAYNES STELLITE COMPANY, Division of Union Carbide Corporation, General Offices and Works, Kokomo, Indiana.



# HAYNES

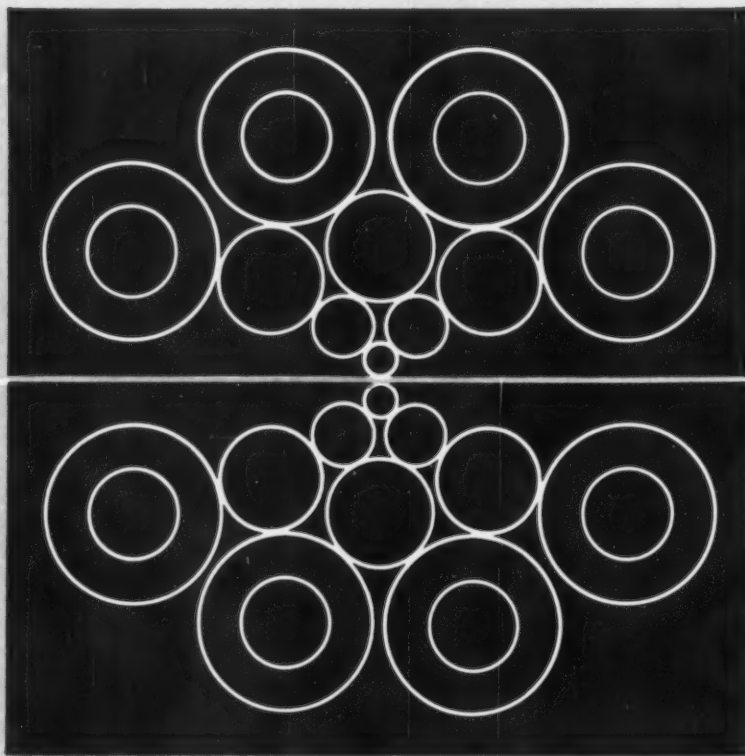
ALLOYS

HAYNES STELLITE COMPANY

Division of Union Carbide Corporation  
Kokomo, Indiana



"Haynes," "Haynes Stellite" and "Union Carbide" are registered trade-marks of Union Carbide Corporation.



**EASTERN PUTS  
THE SQUEEZE  
ON STAINLESS STEEL**



## **SENDZIMIR-PRODUCED STAINLESS STEEL**

**now available in thicknesses down to .007" and widths up to 48"**

As the world's largest exclusive producer of stainless steel sheets and plates it is natural that Eastern would be among the first to produce stainless by the Sendzimir method.

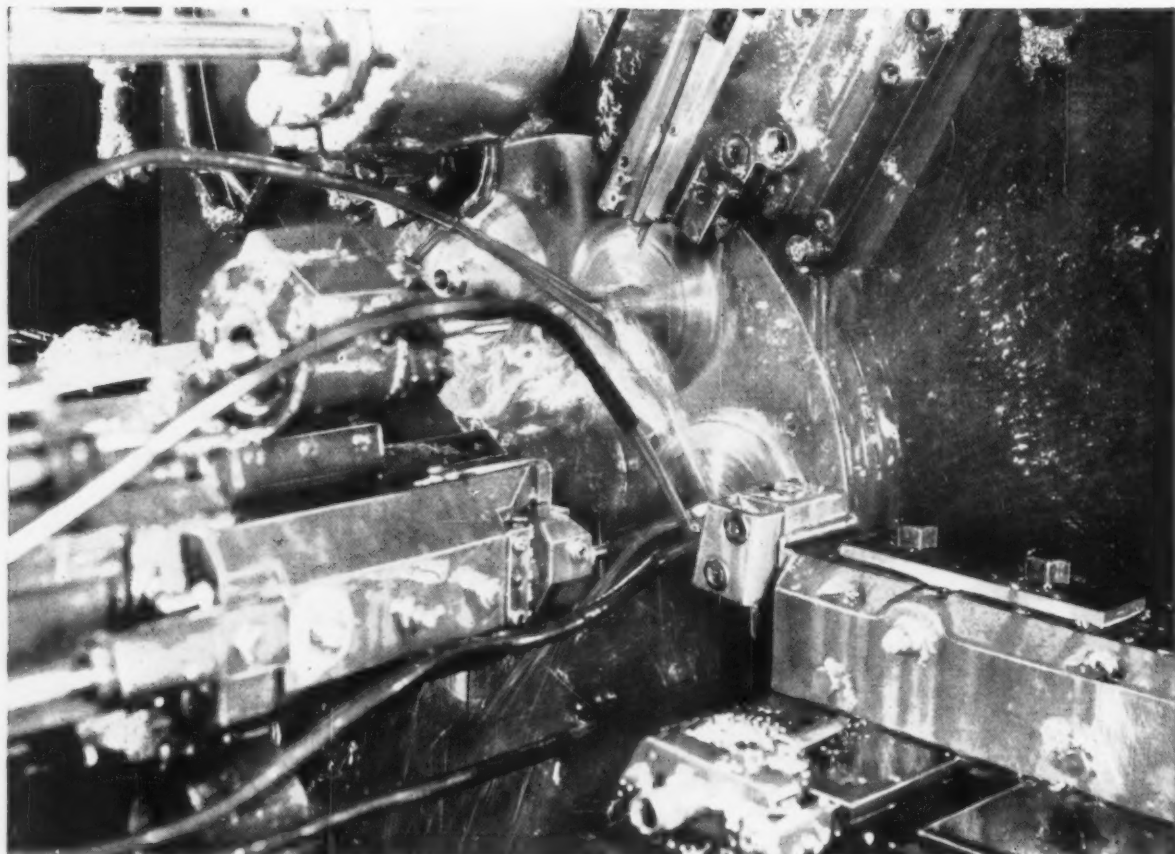
The unusual design of the Sendzimir mill with its small work rolls and series of force-transmitting back-up rolls removes many of the present limitations in the cold rolling of stainless steel.

Production from Eastern's new Sendzimir cold reduction mill rolls off the line in gauges and widths that until recently were impossible to obtain. Gauges held to extremely close tolerances are ideal for use in the supersonic aircraft and missile fields as well as broadly diversified areas in other fabricating industries.

Eastern invites you to explore new applications for the close tolerances and bright finishes of Sendzimir-produced stainless steels. Send for Eastern's new Specification Booklet or consult the Customer Service Department.

## **EASTERN STAINLESS STEEL CORPORATION**

**Baltimore 3, Maryland, U.S.A.**



This 6-spindle 602 New Britain Gridley is cutting SAE 1112 steel . . . with Gulfcut 31C cutting oil. The results are measurable, in terms of longer tool life, fewer rejects, finer finishes.

## They wanted fewer rejects, longer tool life... the answer: **GULFCUT**

Buswell Metal Products, Inc., of Southington, Conn., keeps 27 automatic screw machines busy turning out precision parts for the aircraft and electronic fields. Their cutting oil: Gulfcut 31C.

Gulfcut 31C provides longer tool life . . . and has helped in reducing rejects to less than  $\frac{2}{10}$  of 1%. This sulfurized-mineral-lard oil has outstanding anti-weld properties and load-carrying ability. And it contains sulphur combined in three different forms for maximum chemical activity.

The Gulfcut line includes a cutting oil for *your* specific needs, too. Why not let your Gulf Sales

Engineer recommend the right one . . . perhaps cut your costs in a number of ways? Call your nearest Gulf office today!

### **Gulf Oil Corporation**

1822 Gulf Building  
Pittsburgh 30, Pa.



THE FINEST PETROLEUM PRODUCTS FOR ALL YOUR NEEDS



# How 3 major companies speed handling and cut costs with **USS GERRARD STEEL STRAPPING**



**CLIMAX FIRE BRICK CO.**, Climax, Pa., states, "USS GERRARD Flat Steel Strapping has saved money in loading, storage, breakage and man-hours not only for us but for our customers as well. We have reduced shipping damage to less than 1%, and cut man-hour time loading freight cars by 75%. And, since we can safely stack GERRARD-palletized tuyeres much higher, we've increased storage space by 33%."

Bring your packaging-tying problems to **USS Gerrard**. Regardless of what they are, our engineers will help you to find the safest, surest, most economical solution to them.

GERRARD STEEL STRAPPING DIVISION, UNITED STATES STEEL CORPORATION  
GENERAL OFFICES: CHICAGO, ILLINOIS

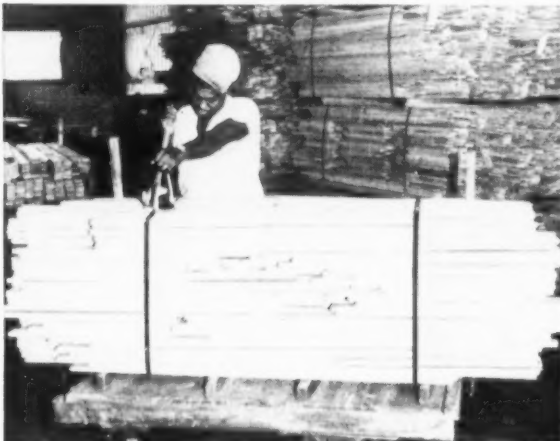
## USS GERRARD

*Round and Flat* **STEEL STRAPPING**

UNITED STATES STEEL



**GLEN-GERY SHALE BRICK CORP.**, Reading, Pa., feels that, "USS GERRARD Round Steel Strapping enables us to balance our work load, service customers faster, and reduce breakage. During slow winter months, we package 500-brick units and store them for the busy season. In this way, we're set for rush orders, and one man can load a full trailer truck in 15 minutes. It used to take three men over 30 minutes. The bricks stay cleaner, there's less breakage, and units arrive in excellent shape. We've found GERRARD Round Strapping to be the least expensive form of strapping."



**E. A. STEWART LUMBER CO., INC.**, Texarkana, Texas, has this to say: "Handling time cut 80%, storage space increased 60%, with the aid of USS GERRARD Flat Steel Strapping. Two men with a fork lift can now load a freight car in 1½ hours, a job which previously took five men six hours! Trucks can now be loaded in half the time formerly required. And, due to the firm packaging by GERRARD Steel Strapping, warehouse storage space has been increased by 60% . . . since pallets can be stacked much higher."

### GET THIS CATALOG NOW

Gerrard Steel Strapping Division  
United States Steel Corporation  
4711 South Richmond St., Chicago, Ill.

Please send me, free of charge, the new 36 page  
GERRARD Blue Book of Packaging.

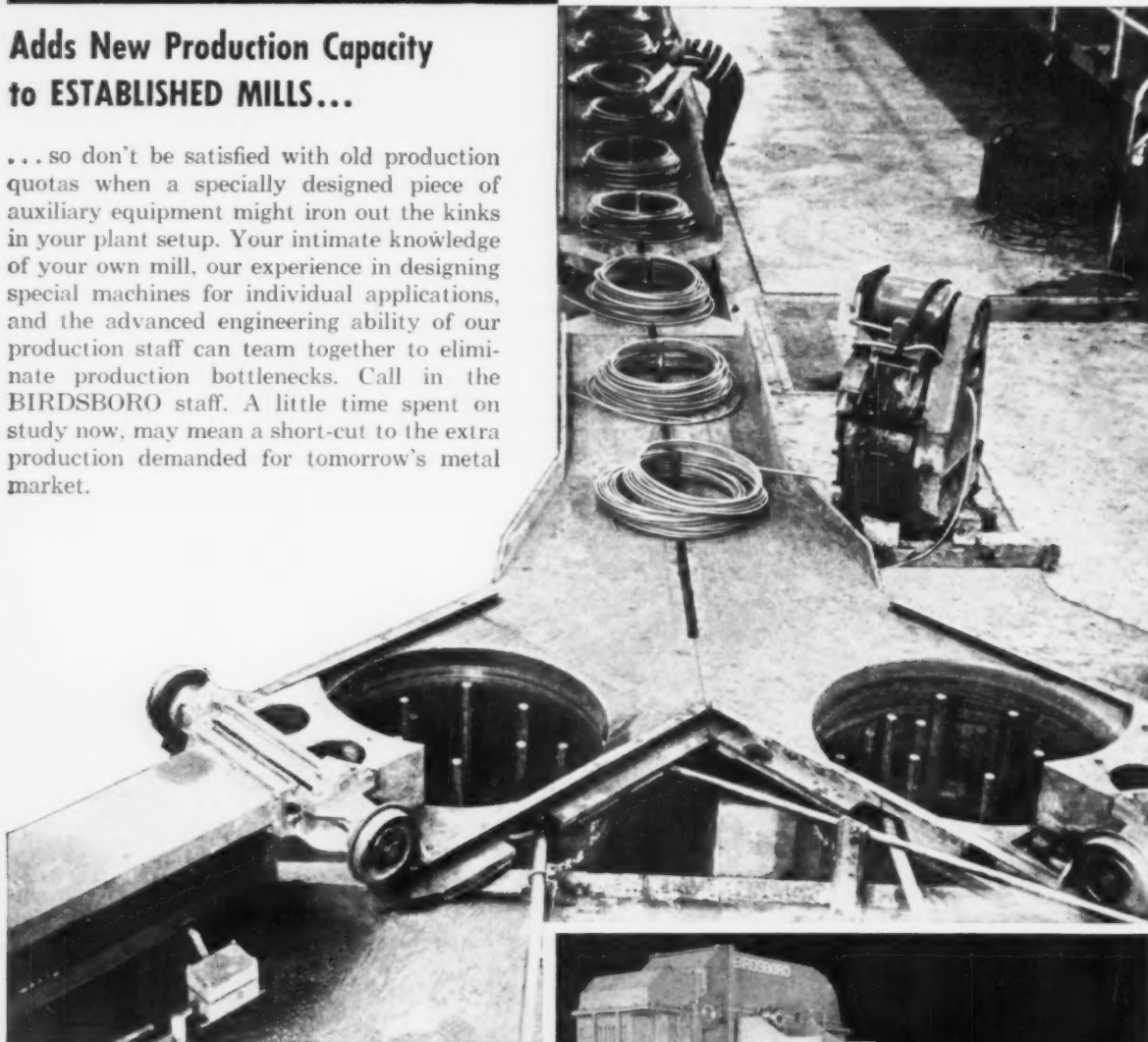
Name   
Title   
Company   
Address   
City  State

# BIRDSBORO

## Auxiliary Mill Equipment

### Adds New Production Capacity to ESTABLISHED MILLS...

...so don't be satisfied with old production quotas when a specially designed piece of auxiliary equipment might iron out the kinks in your plant setup. Your intimate knowledge of your own mill, our experience in designing special machines for individual applications, and the advanced engineering ability of our production staff can team together to eliminate production bottlenecks. Call in the BIRDSBORO staff. A little time spent on study now, may mean a short-cut to the extra production demanded for tomorrow's metal market.



DESIGNERS  
AND BUILDERS  
OF:

STEEL MILL MACHINERY

HYDRAULIC PRESSES  
(Metalworking and Extrusion)

CRUSHING MACHINERY

SPECIAL MACHINERY

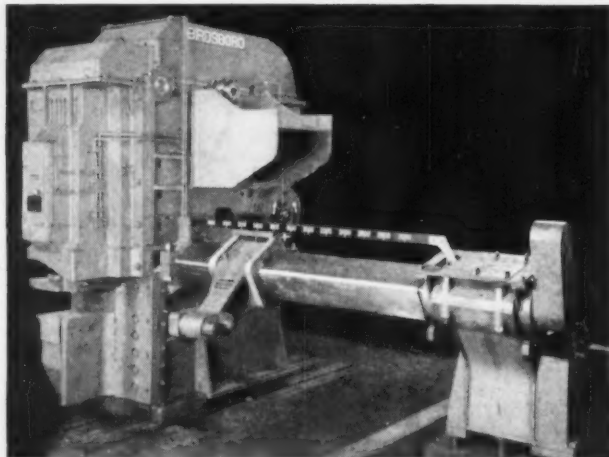
STEEL CASTINGS

Weldments "CAST-WELD" Design

ROLLS: Steel, Alloy Iron, Alloy Steel

20"-18"-14"-12"-10"  
Combination Mill  
Rod Coilers and Rod  
Coil Conveyor.

This 350-ton Birds-  
boro Up and Down  
Cut Shear and Gauge  
is used for hot shear-  
ing of 8" x 8" carbon  
steel blooms.



MM-54-56

# BIRDSBORO

BIRDSBORO STEEL FOUNDRY & MACHINE CO., Main Offices in Birdsboro, Pa. District Office: Pittsburgh, Pa.

New York Office: Engineering Supervision Co., 120 West 42nd Street, New York 36, N.Y.



## **BH Bond cuts grinding costs in rough snagging operations**

**Gardner's new BH Bond gives:**

**longer disc life**

BH Bond is tougher, more heat-resistant

**higher production**

eliminates frequent disc changing

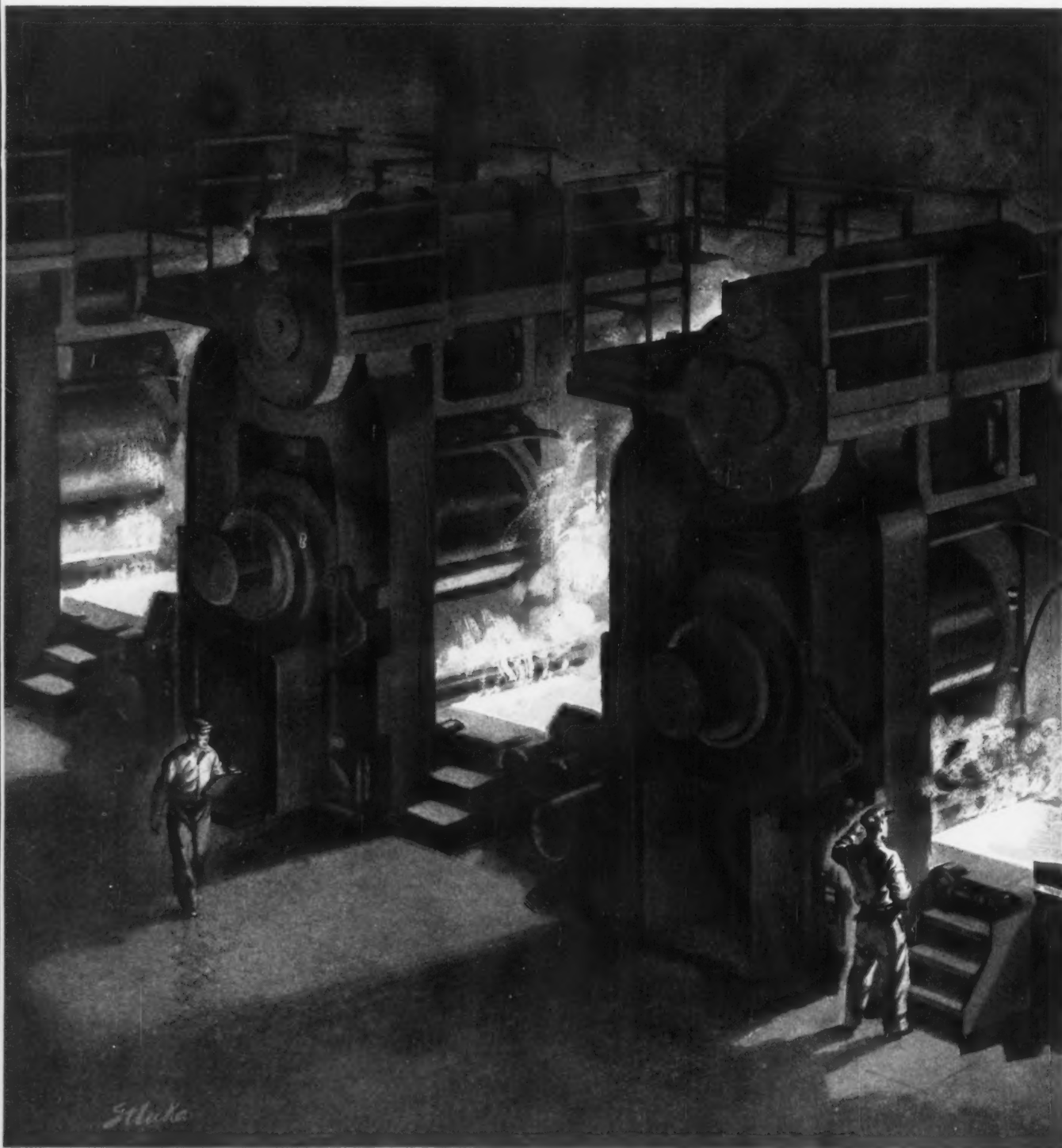
**greater efficiency**

more production per disc

*BH Bond can be supplied in all standard disc sizes*

***GARDNER***  
**abrasive discs**  
BELOIT, WISCONSIN

# ALLIS-CHALMERS..



**Products for steel:** motors, m-g sets, rectifiers, control, pumps, *Texrope* drive equipment, crushers, grinding mills, screens, transformers, unit substations, switchgear, circuit breakers, turbine-generators, voltage regulators, blowers, compressors, condensers, and water conditioning equipment.

*Texrope* is an Allis-Chalmers trademark.

# ALLIS-

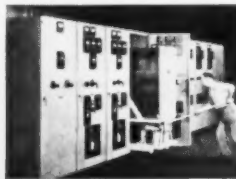


# . in Step with **STEEL**

## **The Hot-Strip Mill**

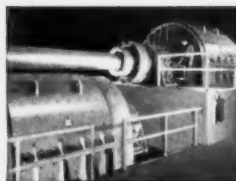
**Reliable drive power** to roll steel with speed and precision is provided by Allis-Chalmers hot-strip mill equipment. Powerful, specially designed driving components keep slabs moving round the clock to help steel producers keep pace with mounting demands. Step by step, Allis-Chalmers helps STEEL reach new production levels — set new standards in quality.

From mine to final processing, Allis-Chalmers equipment is in step with the tempo of expanding steel production. Contact the nearest A-C office in your district, or write Allis-Chalmers, Milwaukee 1, Wisconsin.



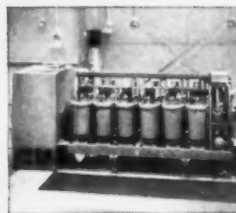
### **Switchgear**

is specially designed by Allis-Chalmers to bring high voltage to load centers, with resultant economy in cable costs, minimum line loss, efficient regulation, and complete protection.



### **Dc motors**

— Precision speeds for hot-strip mill performance are provided by a wide range of dc motors powered by supporting motor-generation sets or rectifiers.



### **Mercury arc rectifiers**

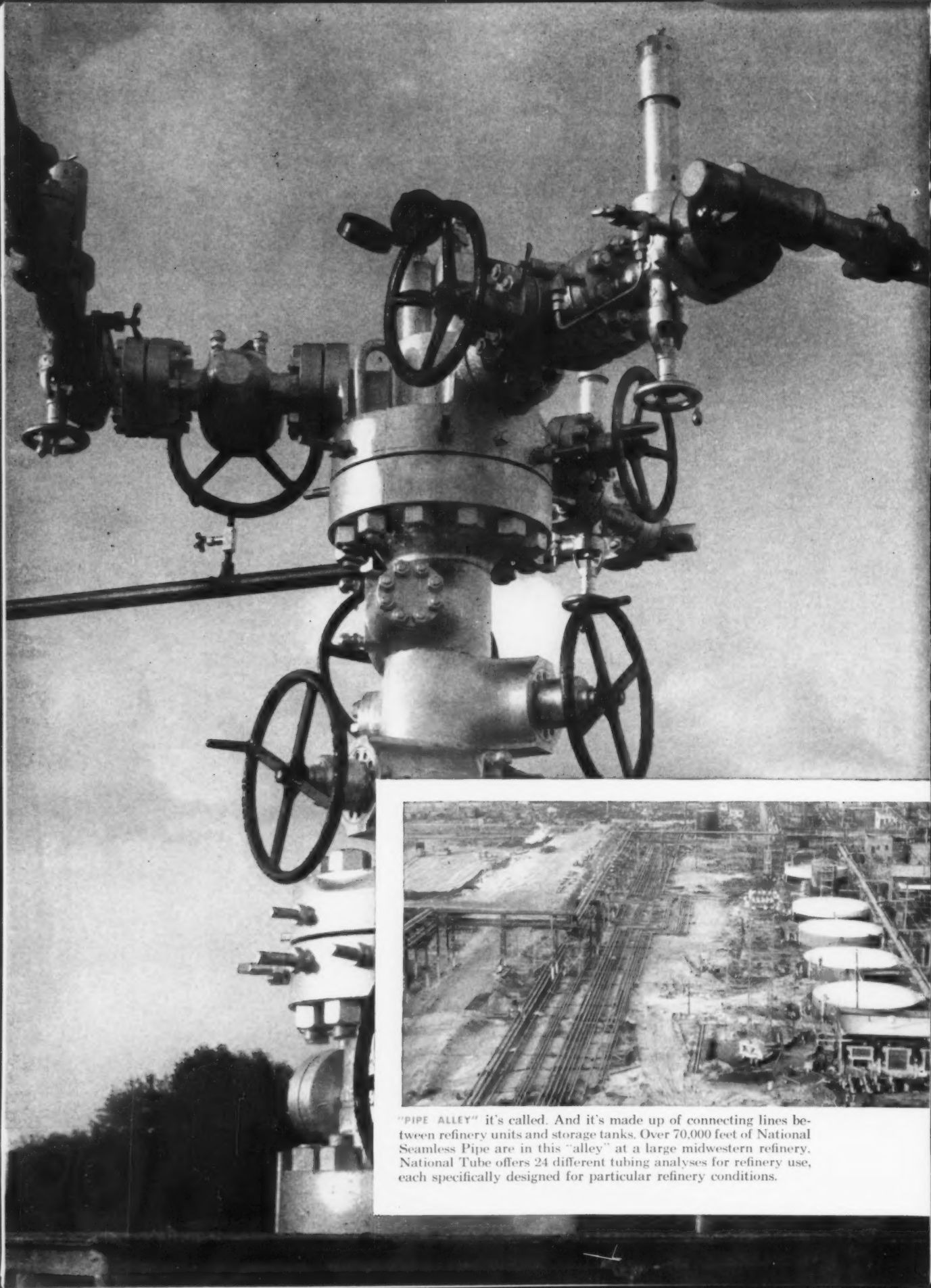
furnish variable voltage dc power in support of dc drive motors. They are low cost, high efficiency units providing fast response to control signals, resulting in better voltage control and reduced maintenance.

For hot-strip mill operation, Allis-Chalmers also supplies mag-amp regulators, and auxiliary motors and control.

# **CHALMERS**



A-5413



"PIPE ALLEY" it's called. And it's made up of connecting lines between refinery units and storage tanks. Over 70,000 feet of National Seamless Pipe are in this "alley" at a large midwestern refinery. National Tube offers 24 different tubing analyses for refinery use, each specifically designed for particular refinery conditions.

◀ CALLED A "CHRISTMAS TREE," this unique connection is the surface outlet for an oil well and two gas wells. In this, America's first triple completion well, are 12,646 feet of National Seamless Casing and 35,949 feet of National Seamless Tubing. Possessing strength and collapse resistance surpassed by no other oil country tubular products, National Seamless is—and rightly so—the oil man's consistent choice for the toughest jobs.

# Backbone of a Hundred Industries...

## NATIONAL SEAMLESS PIPE AND TUBES

What does USS NATIONAL Seamless Pipe have to do with a Christmas tree? Quite a lot, if it happens to be the type of Christmas tree that tops off an oil well. You'll find NATIONAL Seamless doing all jobs in all industries—carrying oil, gas and other products, for high-pressure purposes, or being used as the basic shape for hundreds of tubular mechanical applications.

NATIONAL Seamless combines to the highest degree such vital qualities as strength, safety and workability. Absolute uniform wall strength throughout and dimensionally accurate, NATIONAL Seamless Pipe and Tubes assure smooth installation and long, satisfactory service. Available in a complete range of steel analyses, wall thicknesses and diameters, every foot is produced to exacting standards by the world's largest manufacturer of tubular steel products.

Bring your pipe and tubing problems to National Tube. Regardless of the application, our engineers are interested in discussing the problem with you.

**NATIONAL TUBE DIVISION, UNITED STATES STEEL CORPORATION, PITTSBURGH, PA.**  
COLUMBIA-GENEVA STEEL DIVISION, SAN FRANCISCO-PACIFIC COAST DISTRIBUTORS  
UNITED STATES STEEL EXPORT COMPANY, NEW YORK



## NATIONAL SEAMLESS PIPE AND TUBES



THE NATIONAL SEAMLESS METHOD of manufacture is one of the most difficult forging operations in the steel industry. A billet of the finest steel is actually pierced to produce a seamless tube with absolutely uniform wall strength. No welds . . . no joints . . . no weaknesses.



THIS WRING-FIT BUSHING, manufactured from National Tube's Shelby Seamless Mechanical Tubing, makes possible a truly precision die set, which permits closer working tolerances and extends the life of the dies to a degree never before thought possible. The bushing is harder, stronger, more uniform, longer-lasting and better-fitting. What's more, manufacturing time is minimized, for when you use Shelby Seamless, the hole is already there.



GASEOUS NITROGEN STORED AT 3000 PSI—The Propulsion Field Laboratory of Rocketdyne is using USS National Seamless Steel Cylinders to store gaseous nitrogen at pressures of 3000 psi. The gas is used as a pressure source during tests of large liquid rocket engines. In any application, regardless of pressures, USS National Seamless Steel Cylinders provide the utmost in strength and dependability.

U N I T E D S T A T E S S T E E L





## Anaconda Aluminum and

**ALUMINUM COILED SHEET** produced to the high standards of quality and uniformity maintained by The American Brass Company is now available for prompt shipment from our Torrington Division to all points in the United States.

It is rolled on the most modern, high-speed equipment, X-ray controlled to close tolerance in gage. High-speed, electronically operated slitters give exact widths with clean edges on evenly and tightly wound coils. Latest bell-type annealing furnaces provide high uniformity of metal structure to meet specified mechanical-property limits.

**IN THESE WIDTHS:** Maximum 28 inches  
Minimum  $\frac{3}{8}$  inch

**IN THESE THICKNESSES:** Maximum 0.064 inch  
Minimum .008 inch

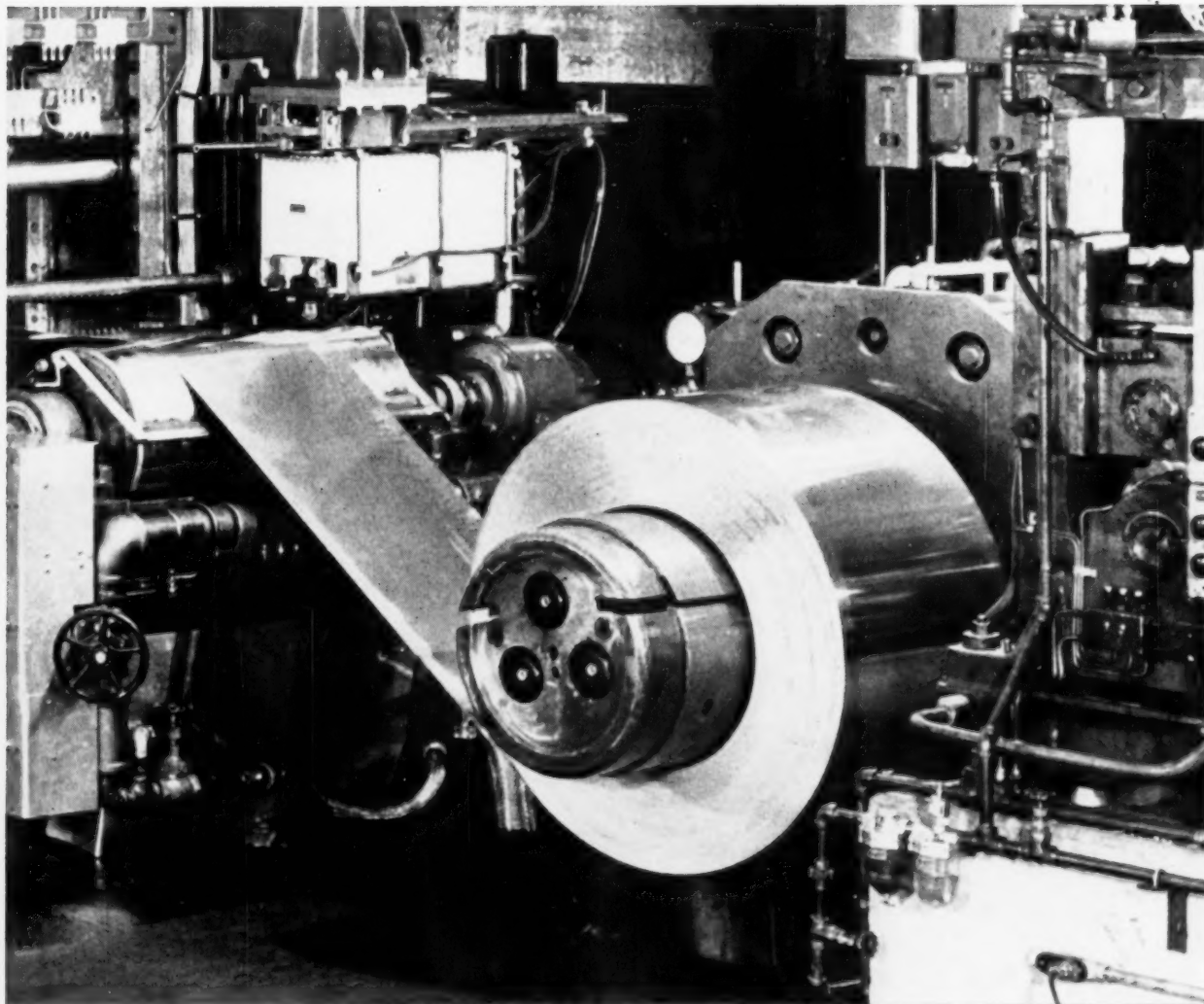
**COIL WEIGHTS:** Up to 100 lb. per inch of width

**ARBOR SIZES:** 4, 6, 8, 10, 12, 16, and 20 inches in diameter

**ALLOYS:** 1100, 3003, 3004, 5005, 5050, 5052

**TEMPERS:** Alloy Nos. 1100, 3003, 5005  
—O, —H12, —H14, —H16, —H18  
Alloy Nos. 3004, 5005, 5050, 5052  
—O, —H32, —H34, —H36, —H38





# Aluminum Alloy coiled sheet

**FOR IMMEDIATE ACTION, CALL THE AMERICAN BRASS COMPANY OFFICE NEAREST YOU:**

Atlanta, Ga. .... TRinity 5-9291  
 Boston, Mass. .... UNiversity 4-9711  
 Cedar Rapids, Iowa ... EMpire 4-2465  
 Charlotte, N. C. .... FRanklin 5-2566  
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 Cincinnati, Ohio. .... GARfield 1-9050  
 Cleveland, Ohio. .... CLearwater 1-1105  
 Columbus, Ohio. .... CAPitol 1-5771  
 Dallas, Texas .... EMerson 8-6311

Denver, Colo. .... AComa 2-7933  
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 Los Angeles, Calif. ... NEvada 6-0321  
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 Milwaukee, Wis. .... MITchell 5-4775  
 Minneapolis, Minn. ... FEderal 9-3057  
 Newark, N. J. .... MITchell 2-6916  
 New York, N. Y. .... OXFord 7-1166

Philadelphia, Pa. .... NEbraska 4-7700  
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 Providence, R. I. .... GASpee 1-2180  
 Rochester, N. Y. .... HAMILton 3350  
 St. Louis, Mo. .... CHEstnut 1-1155  
 San Francisco, Calif. ... YUKon 6-0051  
 Seattle, Wash. .... ELliot 2565  
 Syracuse, N. Y. .... HARRison 2-1205  
 Washington, D. C. ... EXecutive 3-5867

The American Brass Company, Waterbury 20, Conn. Phone PLaza 4-1121

5791

**ANACONDA<sup>®</sup>** ALUMINUM AND ALUMINUM ALLOY COILED SHEET  
*Made by The American Brass Company*



**Pickling eliminated . . .** To form these radiator steam vent shells requires nine drawing operations and four anneals. Prior to the use of a steam Homo furnace, pickling was necessary after each anneal, then a heavy pickle and buffing before chrome plating. Since switching to steam annealing this mid-western manufacturer has been able to eliminate all pickling . . . uses only a quick buff and bright dip before plating. Not only did the furnace pay for itself in a few months through handling and labor savings, but die life has considerably improved due to the clean surfaces of the brass.


**Zero rejects . . .** Beryllium-copper parts, such as switch and amplifier components for electrical equipment which must be plated after age hardening, heat treat in steam atmosphere with minimum oxidation . . . come from the furnace so much cleaner than in air that subsequent pickling operations can be substantially reduced and the difficulty of rejects eliminated.

The switch components above, for instance, formerly required pickling in hot sulphuric acid, a hydrochloric acid dip and a bright dip before plating . . . and plating rejects averaged 25%. Annealing in a steam atmosphere eliminated the two acid dips by preventing scale formation. Costs came down even more because the cleaner parts reduced the reject rate to zero.



Catalog TD2-620(1) tells all about it too;  
we'll be glad to send you a copy.

# Cut your Pickling and Cleaning Costs . . . with Steam Treating!



If pickling and cleaning operations are part of your production costs . . . on either ferrous or non-ferrous metals . . . there's a good chance steam atmosphere heat treating will prove an unsuspected source of surprisingly substantial savings for you.

Within the past few years, many plants have successfully overcome surface cleaning problems on structural steel alloy parts . . . have substantially reduced or eliminated pickling between draws of brass fittings and parts . . . have reduced rejects due to oxidation on parts of beryllium-copper and aluminum. In short, steam atmosphere heat treating has proved an easy, safe, inexpensive shortcut to uniform, scale-free metal surfaces.

On the opposite page are just four examples to illustrate our point. If you want others . . . or details on any of these . . . or want us to help investigate possible savings in your plant, just phone your nearest L&N office or write us at 4956 Stenton Ave., Phila. 44, Pa.



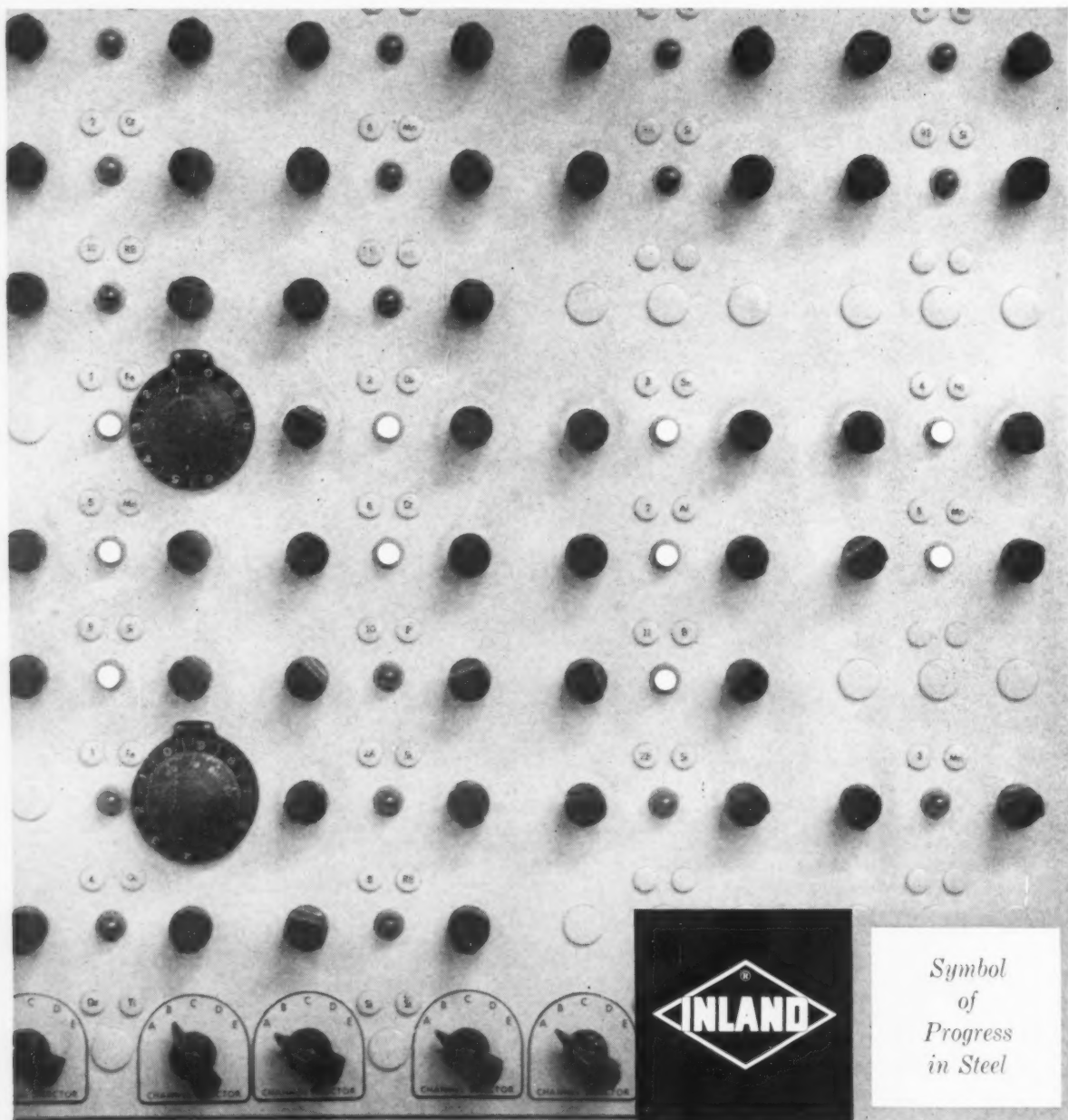
**Buffing cost cut 40% . . .** Many aluminum parts used as electrical and machinery components fabricated from the hardenable alloys such as Alcoa 61S or 75S require a final chemical or mechanical cleaning after solution treating. On such parts solution treating in a steam atmosphere results in a more uniform, more metallic and more reflective surface finish, compared to the duller matte finish obtained in air. A typical example are these aluminum alloy clutch arms. Solution treating them in a steam atmosphere saved up to 40% of the cost of subsequent buffing operations.



**Threads kept clean, uniform . . .** In the manufacture of hardened bolts and studs, cold-headed bolts, etc. for automotive and aircraft use, surface cleanliness of threaded sections becomes extremely important to speed-up assembly operations. In other cases where torque-indicating wrenches are used, the presence of surface scale can easily cause a false reading resulting in improper tightening and subsequent premature failure of the bolt. When such parts are steam tempered after hardening they come out clean and free from scale, with a uniform blue-black finish. When pickling is necessary, prior to plating or other surface finishing, the uniformity of the surface finish results in substantially reduced pickling time. For example, pickling time prior to plating the cold-headed bolts above was reduced 66% and rejects were eliminated, after steam treating became standard procedure.

# Tilt!

From Inland open hearth furnaces, some over a mile away, steel samples speed through pneumatic tubes, converge at a central laboratory check point. Formerly, chemical analysis meant lost time, slower production schedules. Now, modern electronic devices make special analyses, instantly record the presence and amounts of each chemical and mineral element. Across the panel of this direct reading spectrograph, lights flash—warn if an element exceeds plus or minus limits. Within minutes, instructions rush back to the open hearth crew to complete or divert the heat. It is one of scores of controls assuring that the steel you buy from Inland will be . . . "as ordered!"



*Symbol  
of  
Progress  
in Steel*

INLAND STEEL COMPANY • 38 South Dearborn Street • Chicago 3, Illinois

Sales Offices: Chicago • Milwaukee • St. Paul • Davenport • St. Louis • Kansas City • Indianapolis • Detroit • New York



## New Calif. Steel Mill

Principals are denying it but there are persistent rumors about another California steel mill. Talks have taken place between an Ohio steel producer, a top western construction firm and a California bank. Word has it that the new mill would be spotted in the northern part of the state and produce pipe and tubing. To make the steel, electric furnaces would use beneficiated ores from the Shasta Lake area, plus petroleum briquettes.

## Hope For Less Jet Noise

Intensive Air Force research on designs for jet engine noise suppressors is turning out well. Search for a standard unit continues, but at least one type has had a successful test record. It's a prefabricated steel silencer that bolts together. For larger engines, extra prefab sections can be added to the basic unit.

## Aluminum Sales Dawdle

Don't look for any sharp increase in demand for aluminum during the remainder of the third quarter. Summer months are normally slow; besides, there was some price-hedge buying in anticipation of the August 1 increase. Aluminum officials expect a fourth quarter spurt but will be happy if they can hold current sales levels for the next two months.

## Three-Hose Scarfer

Heavy-duty scarfing is said to be accomplished more easily and at lower cost with a new three-hose torch. It permits controlling the flow of oxygen independently for preheating and scarfing. By so doing, it prevents sudden changes in preheat-oxygen flow when the main scarfing stream is started or stopped quickly. Absence of complicated valving and regulating devices cuts torch-maintenance costs, it's claimed.

## Fast Tinplate Welder

Canmakers' growing use of coiled tinplate prompted development of a high speed unit that butt welds two coil ends in about 40 seconds. It will handle tinplate down to 0.006 in. thick, and will also weld material of different thicknesses or with differential coatings. The process pro-

duces no flash; the welded section can be used in the can. Edges are joined with an inert gas, shielded arc weld. There is no stock added.

## Congress Vs. Navy

The Navy doesn't like congressional plans to force competitive bidding on all contracts except those involving military security. The admirals prefer to negotiate prices in private, but Congress is irked over high-priced contracts and the freeze-out of small firms who never get a chance to bid. Lawmakers show signs of outlawing secret deals.

## Navy Imports Wire Rope

Foreign imports of merchant wire products continue to harass domestic producers. U. S. Naval stores, for example, contain stocks of wire rope bought from European mills. To make these sales, foreign suppliers must meet Navy specifications, add duty charges and combat a six pct price differential granted to domestic producers. They can do all this and still undersell U. S. mills.

## Auto-Weld Magnesium

A new technique permits automatic, continuous welding of magnesium. Using the shielded inert arc, consumable electrode process, it employs a small-diameter coiled wire as both filler metal and electrode. The method can also be applied to the welding of aluminum.

## Use Too Much Metal?

Here's a question that has metal producers guessing: Are a lot of products over-engineered—designed to use more metal than is really needed? Some producers feel there will be a considerable amount of cutting back once basic design soundness has been established. Another thing to ponder: Will a search for even cheaper materials begin at that point?

## Bigger Vacuum Ingots

A consumable electrode vacuum furnace that will turn out 30-in. superalloy ingots will soon be in operation. It's believed that these ingots will be larger, both in weight and diameter, than any yet poured in the superalloy category.

# Farval works in Africa, too—lubrication time reduced 93%, grease use cut 83%

FARVAL—  
*Studies in  
Centralized  
Lubrication*  
No. 202



● Here at a copper mine in Northern Rhodesia, Farval systems were installed on power shovels used to remove overburden. Not only have bearings been protected fully by adequate lubrication, but the time and lubricant savings reported are beyond expectation.

Time required for lubricating shovels has been reduced from two hours per shift to only eight minutes—a 93% reduction. Grease consumption has been cut from 400 pounds per month to only 70 pounds—a saving of 83%.

Farval Centralized Lubrication proves its value in scores of mining operations like this—remote from repair shops and supply centers, where economy and dependability pay real dividends.

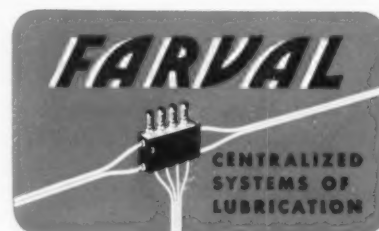
Find out how Farval can help you. Write for Bulletin 26-S, newly revised presentation of the features and advantages of Farval Centralized Lubrication, complete with engineering data on all types of systems. The Farval Corporation, 3282 E. 80th St., Cleveland 4, O.

*Affiliate of The Cleveland Worm & Gear Company, Industrial Worm Gearing.  
In Canada: Peacock Brothers Limited.*

#### KEYS TO ADEQUATE LUBRICATION—

Wherever you see the sign of Farval—familiar valve manifolds, dual lubricant lines and central pumping station—you know a machine is being properly lubricated.

Inset above shows Farval lines and valves mounted on shovel undercarriage.



# How Good Packaging Can Help Sell Your Product

17 3/8" x 20 1/8" a Must in The Tough Battle For Sales

102 A  
107 B

By Gerald Stahl—Gerald Stahl Associates, New York, N. Y.

**A good package can be a vital tool for management. A poor one can hurt sales.**

**A well-planned packaging program also can save money, increase efficiency.**

■ How does a large corporation sell itself to its customers, its stockholders and the general public? Top industrial management is becoming more concerned with this marketing problem as it becomes increasingly apparent that those corpora-

tions who establish a modern, progressive, friendly corporate identity capture an ever-increasing share of the market for their products.

Product and institutional advertising; good public and industrial relations; effective sales representation are easily recognizable as essential to any coordinated marketing program. But how much of a company's advertising, public relations, and sales promotion is wasted when the ultimate object of all this effort, the product, appears old-fashioned, impersonal, obsolete?

**Tools For Business**—Most major corporations are aware that today they are in a race for favorable recognition if they are to win new markets. The master minds of the race are top company executives—vice presidents, presidents, and directors.

The tools of winning this vital race are those objects by which a company is seen and recognized—its packaging, trademark, labels, signs, tags, letterheads, and even its office forms, billing, and checks.

**Good Design Helps**—The pro-



**NEW LOOK:** Designer Stahl, left, compares bright new Nichols Wire and Aluminum Co. package with cluttered old one. With him are Frank Nichols, president, and Edward Manix, vice president.



**FAMILY DESIGN:** American Chain and Cable trademark is tied in with well-known chain product.



**CUSTOMER APPEAL:** Dynamic packaging of ACCO's lawn mowers can be easily seen and recognized.



**GLAMOR:** Even steel can look good in a well-designed package, as Jones & Laughlin demonstrates.

fessional designer who can use these tools to establish a strong, favorable visual corporate identity is the creative spark that can help a company win the race. No matter how much advertising and public relations a company does, a package, a label or a letter becomes the ultimate representative of a company to its customers, the general public and even its own employees.

A striking example of what our organization calls "corporate packaging" in industry is the new trademark, packaging and corporate identity program we developed for Jones & Laughlin Steel Corp. J & L's new look has been widely recognized as one of the best current examples of progressive industrial marketing. Indeed it already has won two awards.

**What J. & L. Thinks**—Says J. & L.: "We count our packaging and identification program for all J. & L. products and facilities as part of our over-all advertising and public relation efforts. At the same time we recognize that many of the benefits are of a long-range nature in the form of improved recognition, prestige, employee morale, and customer, community, and public relations."

Nichols Wire and Aluminum Co. is another excellent example of a firm whose top management has sparked its entire marketing program with new and distinctive packaging, trademark and visual corporate identity.

**Job Made Easy**—"Our corporate packaging program cannot be considered merely an effort to improve the appearance of our packages but rather an effort to make the packages easier to handle from the point of manufacture right into the customer's hands," says Frank Nichols, president. "We find that proper packaging eases our job, eases the job of our distributors and jobbers, eases the work of the retailer and the ultimate consumer."

**It Takes Teamwork**—Coordinated and effective packaging or identification of all of a company's products can gain millions of favorable impressions as the products travel from factory to warehouses to customers. A product with a nondescript package is, at best, not seen at all. More often it will create a poor impression.

Another example of this "new look" in industrial packaging and company identification is provided

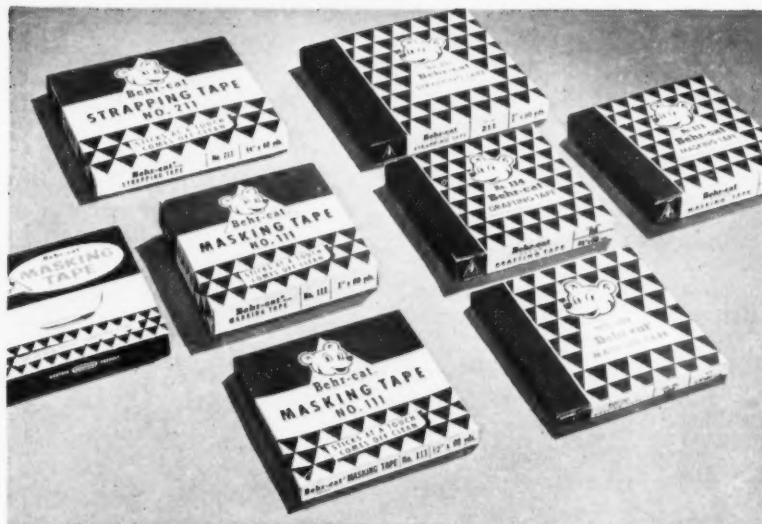
by the program undertaken by Behr-Manning Corp., Troy, N. Y., manufacturers of abrasives, adhesives, and pressure-sensitive tapes.

**Customer Response**—The company's management realized that Behr-Manning packaging wasn't doing its job and decided to re-examine their whole packaging and identification program.

The blue and yellow company colors were retained, but they were brightened and intensified for greater contrast and visibility. The diamond pattern was kept too, but it was simplified to make product identification easier. The bear's head was slightly modified so that it kept its pleasing personality, but its drawing and character were improved. Then the bear's head was incorporated within the Behr-Manning diamond to consolidate the two company symbols into one easily recognizable form. The new design theme was simple, yet distinctive. And it was received enthusiastically by customers.

**What ACCO Did**—Some time ago, top executives of American Chain & Cable Co. returned, greatly concerned, from a series of field trips. Something was wrong with





**UP-TO-DATE:** Behr-Manning kept its bear's head and diamond motif but dressed it up to advantage.

their packaging. The hundreds of ACCO items shipped in several million cartons and shipping containers each year turned into a hodgepodge in distribution channels. Anyone looking for an ACCO product in a distributor's warehouse, an industrial user's stockroom or on a hardware store shelf had difficulty, first, in distinguishing the brand name and, secondly, in identifying the contents after finding the brand.

Having decided upon a package redesign program, ACCO approached it as a public-relations activity. Each new package was calculated to gain the good will of the company's many industrial and hardware distributors. Primary objects of the redesign program were: (1) to strengthen company brand and product identity, (2) to consolidate the many sizes and styles of packages for improved efficiency and economy of packaging operations and purchasing, (3) to step up the over-all appearance of all the company's packaging, (4) to win from the trade, as well as from customers, the good will inherent to good packaging.

**Production Savings**—Our investigation revealed that the packages and trademark were not only out-

moded in concept and appearance, but that substantial economies and production efficiencies could be gained by eliminating some of the large number of sizes and types of packages, cartons and shipping containers.

A strong new trademark was developed to replace an old one because it was complicated. The new trademark simply carries the trade name "ACCO" in an oval symbol of a link in a chain.

**Identity Established**—An overall repeat design combining the name ACCO with stylized chain motifs, printed in a uniform bright yellow and blue color scheme diagonally on all cartons and boxes, gives instant identity to an ACCO product. Variations in the styles of the chains used in this motif, along with an illustration of the actual product contained, help to identify contents of packages and contribute also to attractive package appearance.

Reprints of this article are available as long as the supply lasts. You may obtain a copy from Reader Service Dept., THE IRON AGE, Chestnut & 56th Sts., Philadelphia 39, Pa.

## A CHECKLIST

The following check list is a guide to effective "Corporate Packaging" — Corporate Packaging is the sum total of the visual identification by which a company is seen and recognized.

### Trademark

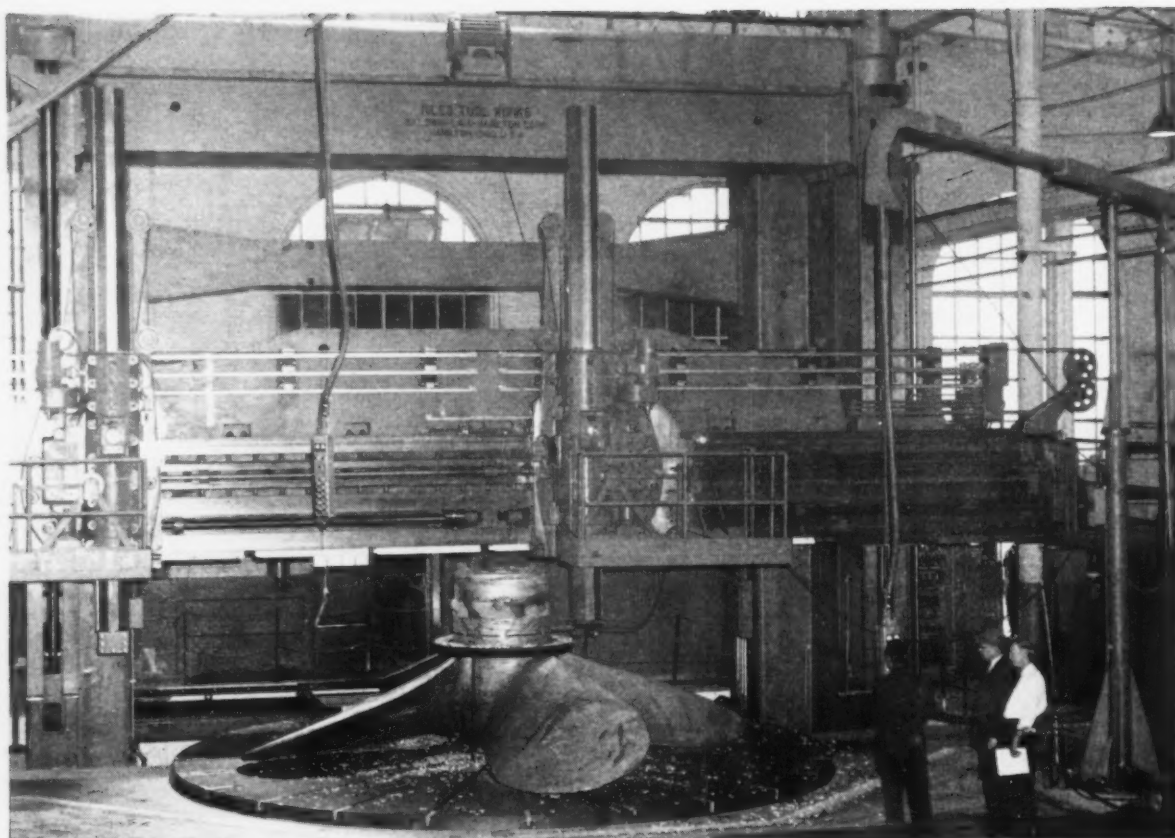
Is the trademark simple in design and distinctive in appearance? Can it be easily seen and understood? Is it easily recognized and remembered? Does it give a good impression of the company? Can it be clearly reproduced on a small label as well as on a large sign?

### Packaging—Labeling

Is design and color uniform? Can it be easily seen and recognized? Is product identification clear and readable? Are the company colors consistent, bright and clean in appearance? Are packaging practices standardized for maximum efficiency, economy and products protection? Can each package, label or tag be equally recognized as being part of a consistent company policy and line of products?

### General

Do the company trademark, design, and colors lend themselves to consistent usage on all company products, packages and services? Does company equipment, signs, letterheads and literature bear the same design identity as packaging and labels?



**JUMBO SIZE:** Heavy machine tools, like this Niles 30-ft boring mill at Bethlehem Pacific, are easier to get.

## Big Tool Deliveries Stepped Up

**Lead times for 'elephant tool' orders have been cut 15-20 pct, two principal builders report.**

**Better showing may renew government interest in heavy machinery stockpiling.**

■ King-size boring mills, lathes and other machine tools are a little easier to get these days.

Because the pioneering work was largely done last year on several new types including elaborate instrumentation, delivery dates now are several months better than a year ago. Yet the two major builders in the field report expected business this year will equal or surpass last year.

**The B-L-H Picture**—And due to

the shortened delivery dates, builders are hoping for renewed interest in the Elephant Machine Tool Program. Under this plan advanced by the builders, the government would help finance major installations or stockpile units to avoid a mad scramble in case of national emergency.

At the Hamilton Div. of Baldwin-Lima-Hamilton Corp., Hamilton, O., builders of Niles tools, projected bookings this year for railroads, electrical manufacturers and general industry are about 25 pct over last year. And lead times on boring mills have dropped from 14-16 months a year ago to 12-14 mos. On giant lathes they are also down from 12-14 mos. a year ago to 10-12 mos. now.

**Foundry Bottleneck** — Most of the lead time shaving on the elephant tools is due to completed designs for which patterns are already available, according to Walter A. Rentschler, vice president and general manager. Because castings run to 50 tons, only a few foundries in the U. S. have the pouring capacity, pit space, and other facilities.

Cross-country shipping of the parts between the few plants large enough eats up more time. And the problem becomes compounded because it takes elephant tools to turn out elephant tools. Machining time on most units is booked a year or more ahead. A 40 ft. boring mill at Allis-Chalmers in Milwaukee, for instance, has been on 24 hour schedule, 7 days a week, since before World War II. It is still

booked months ahead even though a 30 ft mill was installed about 5 years ago.

**Consolidated Cuts Time**—At the other major elephant tool builder, Consolidated Machine Tool Div. of Farrel-Birmingham Co., Inc. at Rochester, N. Y., lead times on giant boring mills are now 8-10 mos. compared to 12-13 mos. a year ago. L. T. Jefferis, Jr., sales manager, said that orders this year should equal 1956. However it will not be on a par with 1955, one of the better recent years, which amounted to 2½ times 1954.

E. S. Coe, vice president and general manager, reports Consolidated has for some time been building complete tools for its railroad line for stock so that shipments can be gotten out in as little as a few weeks or overnight if required.

**Who Is Buying** — Bulk of their new business is coming from major electrical equipment manufacturers, railroad shops, steel mills and large general industrial equipment users.

**A Safeguard** — Among new installations of king-sized B-L-H Niles tools according to G. H. Lynn, sales manager, are a 30 ft. boring mill for Bethlehem Pacific at San Francisco. This and an older 40 ft. mill at Westinghouse's nearby Sunnyvale, Calif., plant are the only two of that size in the West.

The Elephant Tool Program is a pet project of Mr. Rentschler's designed to minimize the tidal wave of work in time of national mobilization. The program was outlined in the Vance committee mobilization report of December, 1956. In brief it would involve basic tools in the manufacturing industry in which there is not adequate semi-peace-time capacity.

**Sizes Recommended** — Tools advocated include three basic sized vertical boring mills from 16 to 40 ft; large, heavy duty engine-type forge and boring lathes, large planers and planer mills. With these it is not necessary to predetermine the end product.

# More Belt Tightening For Defense

**Defense secretary says contract cuts and slowdowns will pare \$1.5 from purchase orders.**

**Wilson sets limit of \$38 billion for fiscal year ending next June.**

■ Further cuts in military procurement are in the making. The Defense Dept. is now working out details of contract reductions and slowdowns that will wipe out up to \$1.5 billion in Army-Navy-Air Force purchase orders.

Defense Secretary Charles E. Wilson says the reason for the cut-back is that "the temperature of the world is down a little."

**\$38 Billion Limit**—Wilson has issued orders to all Pentagon officials concerned with procurement to hold total spending in this fiscal year (which ends next June 30) to \$38 billion. In addition, he has placed the same ceiling of \$38 billion on spending in the following fiscal year.

Wilson is firm in his present in-

tention to hold the line on costs. As he puts it, "I won't approve anything that would raise costs \$1 in the frame of mind I'm in now."

Aircraft procurement is to be stretched out in the months ahead so as to cut defense costs by about \$1 billion.

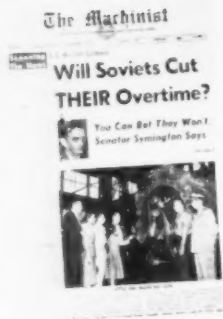
**Maintenance Cuts** — And total outlays for maintenance and operations are to be cut by about \$500 million, thereby bringing the total savings to about \$1.5 billion.

Throughout the Pentagon, procurement officials say the reductions will have little or no impact on actual spending.

**Cuts Are Selective** — The slowdowns in new orders will be chiefly in missiles and advanced weapons that are in the development stages. The cuts will be "selective," Mr. Wilson declares. "That is," he emphasizes, "there will be no across-the-board slashing of all weapons procurement programs."



**SEC. WILSON:** "... In the frame of mind I'm in now ..."



# What Workers Read in Union

**An American Management Assn. survey sets out to learn what, exactly, union papers print.**

**It has turned up some interesting facts on the way labor handles its news.**

■ Have you ever wondered what kind of stuff an employe reads when he picks up a union publication? Is it loaded with anti-company propaganda? Will it undermine his morale and production?

Chances are, his union paper contains a lot less propaganda than in years gone by, reports George H. Haas of the American Management Assn. It may even help a worker do his job better.

**Benefit Is Mutual**—A survey of 45 union publications by AMA reveals that broadened areas of interest by unions during recent years are reflected in their newspapers and magazines. In many instances, the articles a rank-and-file member reads will orient him on issues that are to management's benefit.

For example, the National Maritime Union Journal opposes foreign registry of American ships. The locomotive engineers brotherhood is plugging for lower taxes for railroads. Hotel and restaurant employes are backing more liberal alcoholic beverage control laws.

**Emphasis On Labor**—So when a

worker brings a union paper into the plant, he shouldn't necessarily be eyed as though he were about to throw a monkey wrench into the machinery.

While there is a broadening of interest, union editors apparently aren't losing sight of a union publication's original purpose—to keep their membership informed of union activities.

Almost three-fifths of all space in the 45 publications surveyed by AMA is devoted to union activities: Collective bargaining, political action, internal union affairs, organizing progress, and public relations activities.

**Most Popular**—"As might be expected," Mr. Haas points out, "the most popular single topic in the publications studied is collective bargaining. It constitutes about one-seventh of total coverage." The favorite item of both craft and industrial union publications is a report of the successful conclusion of contract negotiations, he adds.

And the union press is inclined to look on the bright side of things—especially gains made by the union. No item describing a really unfavorable contract was discovered in the course of the AMA analysis. Only a few articles were found that could be interpreted as reporting that the union whose paper carried the item had lost an election.

**Craft vs. Industrial**—"There is a distinct difference in emphasis between the publications of the craft unions, which consist of skilled and semi-skilled workers, and the industrial unions, which have a majority of their members in the unskilled category," Mr. Haas explains.

Craft unions go in more for articles that will help their members improve their skills. Especially you will find items on new equipment, new techniques, new products. Craft unions devote more space to social items about members, international politics, charity, and social causes, fiction and poetry. Almost half the printed space in craft union periodicals is given to these categories, the survey showed.

**Why the Difference?**—The emphasis is somewhat different among industrial union publications. Their main editorial concern is with collective bargaining, internal union affairs, political action, economics, organizing, and public relations activities, and miscellaneous union issues.

Attribute this to the fact that industrial unions are younger and less firmly established than craft unions; that their membership is largely unskilled, and that a large segment of their membership potential is unorganized.

Also, because the industrial union workers are largely unskilled, the turnover in membership is higher





## Papers

than in craft unions. The education job is a bigger one, and the unions hit hard in their publications.

**Ads Analyzed**—“Industrial union papers seldom print technical articles, offer little news of the trade (except that related to collective bargaining), and give little space to fraternal news,” reports Mr. Haas. In contrast to the craft union, whose publications are often in magazine format, the industrial unions most often publish newspapers.

It is interesting to note the difference in advertising. Some craft union publications carry a substantial amount of industrial advertising aimed at selling tools and equipment to members. In industrial union papers, advertising, if any, tends to be of the consumer type.

**Choosing the Papers**—To make this study reflecting the total content of union publications, AMA selected periodicals issued from the central headquarters of national or international unions. Of the 45 analyzed, 27 are the official organs of former AFL unions; 11 are published by former CIO unions; and seven are organs of independent unions.

The 45 unions that publish these periodicals, AMA points out, have a total membership of more than 11 million, or about two-thirds of the American trade union movement.

# New Beryllium Plant Gets Going

**Beryllium Corp. starts up first privately-owned plant at Hazelton, Pa.**

**New unit and Brush expansion pave way for increased industrial uses of promising metal.**

■ Beryllium, a relatively new metal, may soon make itself felt industrially when two companies swing into large-scale commercial production. Present commercial applications include windows for x-ray tubes and parts of missile and other inertia guidance systems.

Right now, it is being produced in limited quantities by Brush Beryllium Co. in a government-owned plant at Luckey, O. Principal use to date has been in atomic reactor parts because it is a good moderator and reflector—which means that it will reflect neutrons and so improve reactor efficiency.

**First Private Plant**—This week, The Beryllium Corp. starts up the first privately-financed plant for quantity production of the metal. The \$4.5 million plant, at Hazelton, Pa., is designed to produce 100,000 lb a year on a 5-year contract with the U. S. Atomic Energy Commission.

Commercial impact is still some time away, however. Beryllium Corp. president Walter R. Lowry told THE IRON AGE at plant dedication ceremonies last week, “We expect to begin fulfilling our AEC contract about the first of next year.”

**Brush Expands**—Brush Beryllium Co., which has been in production since 1939, is now putting up a \$4.5 million plant addition to produce 500,000 lb for the AEC in 5 years, besides substantial other commitments.

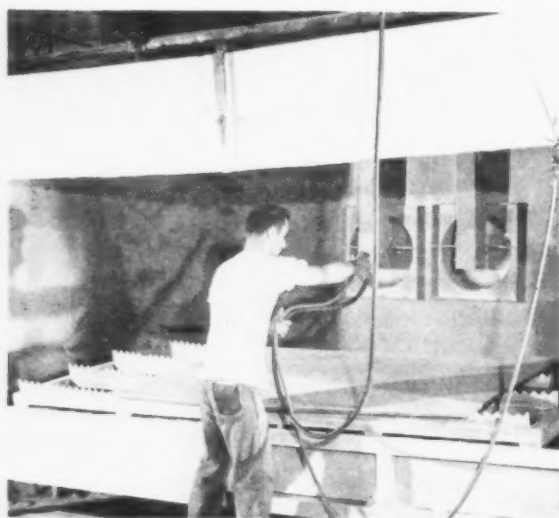
Beryllium is perhaps best known commercially in oxide form where an average of about 2 pct of it appears in beryllium copper. Beryllium metal is steel gray in color and in some properties resembles aluminum and magnesium. It is a bit heavier than magnesium and about two-thirds the weight of aluminum. Its melting point (2345 F) is one of the highest of all of the light metals; its modulus of elasticity (stiffness) is about a third higher than that of steel. Cost of nuclear grade metal has been running about \$85 per lb—against a contract price of about \$47 per lb for the new facilities.

**Production Method**—Expanded output of beryllium metal will not have any immediate effect on beryllium copper prices. “Right now there is no connection,” said The Beryllium Corp.’s sales vice-president, L. F. Boland. “That’s something for the future if a lot of the metal is made,” he added.

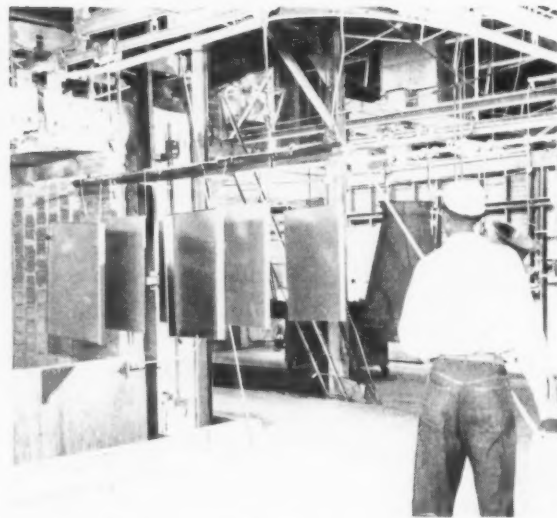
The metal will be produced in the form of 9-in. diam billets weighing some 60 to 75 lb each. Until someone devises a practical way to fabricate the metal itself, the billets will be ground to powder and made into shapes by powder metallurgy techniques.

**Big Potential**—If it could be cast or fabricated into structural shapes the possibilities for aircraft and missile use are fantastic. The Air Force has several research contracts out in this area. If a breakthrough is achieved, the contracts would dwarf those issued by AEC for reactor grade metal.

Since the metal is not very ductile the cost of developing fabricating methods will be heavy. It’s a fair bet that those who will be making beryllium metal will want to have a crack at this problem.



**SPRAYED:** Lead frits are applied with conventional spray gun. (Porcelain Enamel Institute Photos)



**FIRED:** The secret of lead's success lies in the lower temperatures at which the firing ovens are set.

## New Lead Market Has Potential

**Lead base frit now used for nearly all porcelain enameling of aluminum because of low melting point.**

**If lead industry can convince steel enamellers, this market for lead will be among the biggest.**

■ Lead is courting a big, new market — porcelain enameling. Currently, it is happily united with one segment—aluminum. It hopes to use the factor of low melting point to win over steel and aluminized steel.

How big is this potential market? Four years ago no lead to speak of was used in porcelain enameling. By 1961 sales for coating aluminum are expected to easily top one million lb annually. An industry spokesman says if they are able to sell the idea to steel and aluminized steel, tonnages of lead for porcelain enameling would be "terrific."

**Standard Too Hot** — Standard enamels for steel must be applied or fired, in ovens with the temperature fixed at 1450-1550°F. Even a rapid trip through such a hot atmosphere would badly warp or even

melt aluminum. A lead composition frit can be applied or matured even to aluminum foil, in a brief stay in an oven set to 975°F.

The lead industry is attempting to convince steel enamellers that this lower temperature would permit the use of thinner gages and cheaper grades of steel.

**Once Before**—This is actually the second time around for lead. Twenty-five years ago the majority of enamellers used a lead base frit. Toxic qualities of lead proved to be difficult to handle in some applications and they switched. Lead people think they can score this time because, (1) major applications, for curtain walls, appliances, etc., do not come in contact with food, (2) advance technology and new demand for color permits lead frit to offer new advantages and economies, (3) once they land these markets the sky's the limit. Metal curtain walls, for instance, are in their infancy and are generally conceded to have vast potential.

Aluminized steel is a relatively new product expected to go almost 100 pct for lead composition frits

for porcelainizing. Many enamellers say this will eventually account for the lion's share of their business, because it combines advantages of both aluminum and steel.

### **Aluminized Steel Advantages** —

Basically, it consists of a layer of aluminum on a steel base. The aluminum provides: (1) light weight, (2) since the porcelain enamel actually bonds to an oxide coating on the aluminum, damage won't expose the base metal to the elements, (3) more consistent production standards—a builder used to working with porcelainized steel originally estimated his profit on sheathing a building with porcelainized aluminum at 15 pct. He actually made 38 pct because of the fewer rejects with aluminum, (4) workability — porcelain enamel on aluminum can be punched, sheared, sawed or drilled without appreciable spalling of the workpiece.

The steel provides: (1) structural strength, (2) thinner gages than if the whole piece were aluminum, (3) better resistance to warping, (4) base metal economy—steel costs less than aluminum.

# Chain Saws Add New Sales Links

## Better Alloys Allow Lightweight Designs

**Metals research and the labor shortage are helping saw producers break records.**

**And the market potential is far from realized. Lumberjacks, farmers are good prospects.**

■ One-man chain saw manufacturers have cut out a \$40 million-a-year chunk of business for themselves in the past five years and their market is far from saturated.

Sharon Steel Corp.'s market research department estimates that four million farmers are potential buyers. Other customer possibilities are municipal street and park departments, nurseymen, utility companies, and suburbanites who own more than an acre of land.

**Labor Saver**—The rapid rise of this new metalworking market can be laid to several factors, Sharon Steel reports: a shortage of labor in lumber camps; improved chain saw design, and development of lightweight alloy steels.

Chain saws have been available for about 25 years. But older models were heavy and cumbersome. As long as labor was plentiful and relatively cheap, the lumber companies went along with the old two-man hand saw and the axe.

**New Alloys Vital**—When World War II drained the forests of experienced men, labor costs soared. Lumbermen turned to the one-man chain saw to fill the gap. By 1950 there were 50,000 units in use in U. S. lumber camps. The new demand brought swift development of faster, lighter, tougher chain saws.

Sharon Steel was among the pioneers which developed lightweight chromium-nickel-molybdenum steels, making possible the use of new high speed direct motors for

chain saws. By 1956 sales to the lumber industry alone totaled 300,000 units.

**Parts Neglected** — At the same time, timber became a lucrative crop to the farmer who could harvest hard and soft woods on his own land. With the development of the one-man saw, the farmer became a purchaser. Today, three-quarter of a million farmers own chain saws. The cost of a saw, roughly averaging around \$200, is amortized quickly by the sale of timber.

One gage of the new industry's health is the attention manufacturers are paying to maintenance information. Too busy making new saws to concentrate on small parts business, they are promoting educational campaigns to help customers

keep their equipment in top condition.

Here's a hint that the parts market may merit looking into for firms seeking diversification.

Proper break-in, adequate lubrication during use, correct tension on chain, frequent inspection for dull edges, and repeated thorough cleaning are recommended for good maintenance.

Research is going on constantly at Sharon Steel's laboratories to improve even further the steels that go into making saw chains and guide bars.

New models, Sharon points out, incorporate the latest in metallurgy, design, and field experience. The end result is a new and healthy industry working hard to keep up with domestic demand. Their next big step: the export market.



**TIME OUT:** Operator of a one-man chain saw stops work long enough to touch up cutting edges. Saw manufacturers who are too busy with new orders to keep up with replacement parts, stress constant maintenance.

# Second Quarter Earnings Dip

## But Some Firms Set First Half Records

**Steel profits generally declined in the April-June period, reflecting the weaker market.**

**However, strong first half and fourth quarter hopes lead to tempered optimism about '57.**

■ Buyer apathy brought declines in the second quarter earnings of many steel producers.

Among the five largest companies only one—U. S. Steel—had a better second quarter this year than last. However, thanks to a strong first quarter, three of the five—U. S. Steel, Bethlehem, and Republic—registered record first half earnings.

Some companies found the murky market of the second quarter to their liking and bettered earnings

over those in the second quarter of 1956. They included U. S. Steel, Inland and Continental.

**Hopeful Voices**—The banner first half records, coupled with optimism about fourth quarter sales and production, encouraged steel executives to predict that 1957 will be a good year for the industry.

Bethlehem Steel Co., reported President A. B. Homer, is still optimistic about the full year despite the second quarter turndown. Granting there had been a "falling off in the orders booked," he stated, "We feel we are now at low point and we have noted definite indications of a slow pickup."

There was similar tempered optimism from other steel leaders:

Roger M. Blough, chairman of U. S. Steel Corp.: "There is evi-

dence already of some pickup in steel orders, although it's not a marked improvement. We expect a further pickup in the fall as the automotive industry gets into production of new models."

C. M. White, chairman of Republic Steel Corp.: "Some of our largest customers are not producing up to expectations and are still working off some of the large inventories they had accumulated prior to last summer's steel strike."

"We believe that this situation will remedy itself in the last half of the third quarter and our present expectation is that the year as a whole will measure up to our best performance."

J. L. Mauthe, chairman of Youngstown Sheet and Tube Co.: "Based upon projections of activity for the major steel consuming industries, it seems probable that the fourth quarter will show a marked improvement in steel demand and operations."

**A Record Half**—Despite the current slack market, U. S. Steel set new company marks in three areas—second quarter net earnings, first half earnings, and first half sales. The company's net income for the second quarter was \$115.9 million as compared with \$104.3 million for the second three months of '56. First half earnings were \$231.4 million as opposed to \$208.5 million in first half 1956.

Although Bethlehem's second quarter earnings this year (\$50,273,000) were off the 1956 pace (\$50,298,000), the firm's net income for the first half set a new high of \$103.7 million.

Similarly, while Republic's second quarter 1957 net earnings were \$24.8 million as against \$26.4 million for the same period last year, the company had a new record in first half earnings.

### Steel Earnings—1957 versus 1956

COMPANY	Second Quarter 1957	Second Quarter 1956	Pct Change
U. S. Steel	\$115,943,199	\$104,389,496	+11.1
Bethlehem	50,273,507	50,298,227	- 0.5
Republic	24,865,071	26,491,060	- 6.1
Inland Steel	15,150,752	14,944,932	+ 1.4
Armco	15,022,540	17,418,448	-13.8
Jones & Laughlin	13,770,000	17,350,000	-20.6
National Steel	12,607,341	14,858,824	-15.2
Youngstown Sheet & Tube	11,317,042	11,328,916	- 0.1
Colorado Fuel & Iron	4,352,322	4,693,556	- 7.3
Granite City	2,857,505	3,829,021	-25.4
Allegheny Ludlum	2,951,427	4,517,971	-34.7
Wheeling	2,834,000	6,119,000	-56.3
Crucible	2,673,390	4,405,828	-39.3
Acme Steel	1,707,322	2,008,053	-15.0
Pittsburgh Steel	1,610,063	2,311,483	-30.3
Barium	1,257,264	1,445,043	-13.0
Sharon Steel	1,137,381	2,067,761	-45.0
Continental	1,024,048	861,761	+18.8
Detroit Steel	855,798	1,963,719	-56.4
Copperweld	817,842	902,099	- 9.3
Alan Wood	307,000	598,000	-48.7



# MULTIPRESS

**boosts carbon core production 33%  
at CLEVELAND GRAPHITE BRONZE**

Cleveland Graphite Bronze has increased the production of soft carbon cores for aircraft bearing castings by 33% using a 25-ton Denison hydraulic Multipress.

Machining cores to shape, the best alternative method, can be done at the rate of 70-75 per hour. With Multipress, 100 cores are formed in the same period. Soft carbon at one-tenth the cost can be used instead of the hard carbon required in a machining operation.

Datalog COM-3 describes this operation in detail.  
For your copy, write Denison Engineering Division, American Brake Shoe Co., 1242 Dublin Road, Columbus 16, Ohio.



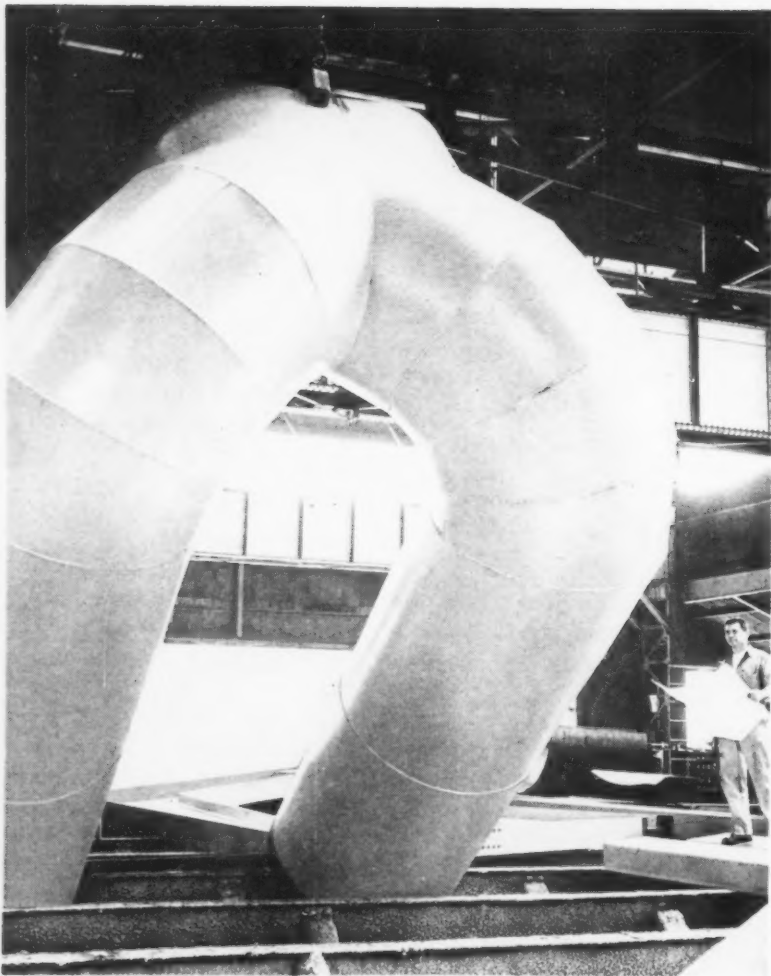
HYDRAULIC PRESSES • PUMPS  
MOTORS • CONTROLS

*Hydraulic ram on 25-ton Multipress descends to press carbon into core form in the first stage of two-part operation.*

*Plug is removed from soft carbon core after stripping operation at Cleveland Graphite Bronze.*



Denison, Denison HydrOILics, and Multipress are registered trademarks of Denison Eng. Div., ABSCO



**TAILOR MADE:** Pants-like affair is a six-ton pipe section for repairing No. 4 blast furnace at U. S. Steel Corp.'s Youngstown District Works. It was made at U. S. Steel's American Bridge Div. plant, Ambridge, Pa.

## Automakers Press Mills For Bigger Coils

High speed stamping plants are driving for larger coils of steel for straight line production. Most major sheet producers have boosted the size of their unwelded coils to 20,000 lb. but this still leaves stampers with unused capacities.

Ford plants, at Cleveland and elsewhere are set up to handle coils to 60,000 lbs. General Motors plants are backing the push for bigger coils. And new Chrysler stamping plants, like the one being built near Cleveland, intended to be

the world's largest, want king-size coils. Many steel mills are listening.

**Mills Think Bigger**—Republic Steel's Cleveland mill, for example, is revamping its 98 in. mill to turn out 30,000 and 40,000 lb coils with a minimum number of welds, or none at all. Great Lakes Steel Co. is turning out mammoth coils on its 96 in. mill, using slabs from a 76 in. slabbing mill. Jones & Laughlin's Cleveland mill will be able to turn out 30,000 lb coils to 72 in. wide when its current expansion is completed. Its Pittsburgh mill will turn out 40,000 lb coils.

U. S. Steel has 80 in. mills at Irwin, Gary and Fairless Works. While no program has been announced on large coils, they are not expected to be far behind any trend. In the far West, Columbia-Geneva Div. will turn out 40,000 lb coils in the near future.

**Not All Agree**—Not all steelmen are in agreement on the wisdom of the larger sizes. One major Ohio steel executive said last week: "The auto plant engineer's dream seems to be to feed sheets a mile long into their plants just like a printing press. But in the huge coils there are bound to be surface defects here and there."

Other firms are not willing to make the extra investment for automakers only, and will stick to the 10,000 and 20,000 lb coils.

Because of the larger facilities necessary to produce unwelded coils, they carry a premium of about \$5 per ton. To the automakers it's worth it.

## New R-N Executives

Dr. Alex Stewart has been named president and general manager of the R-N Corp., a jointly owned subsidiary of National Lead Co. and Republic Steel Corp.

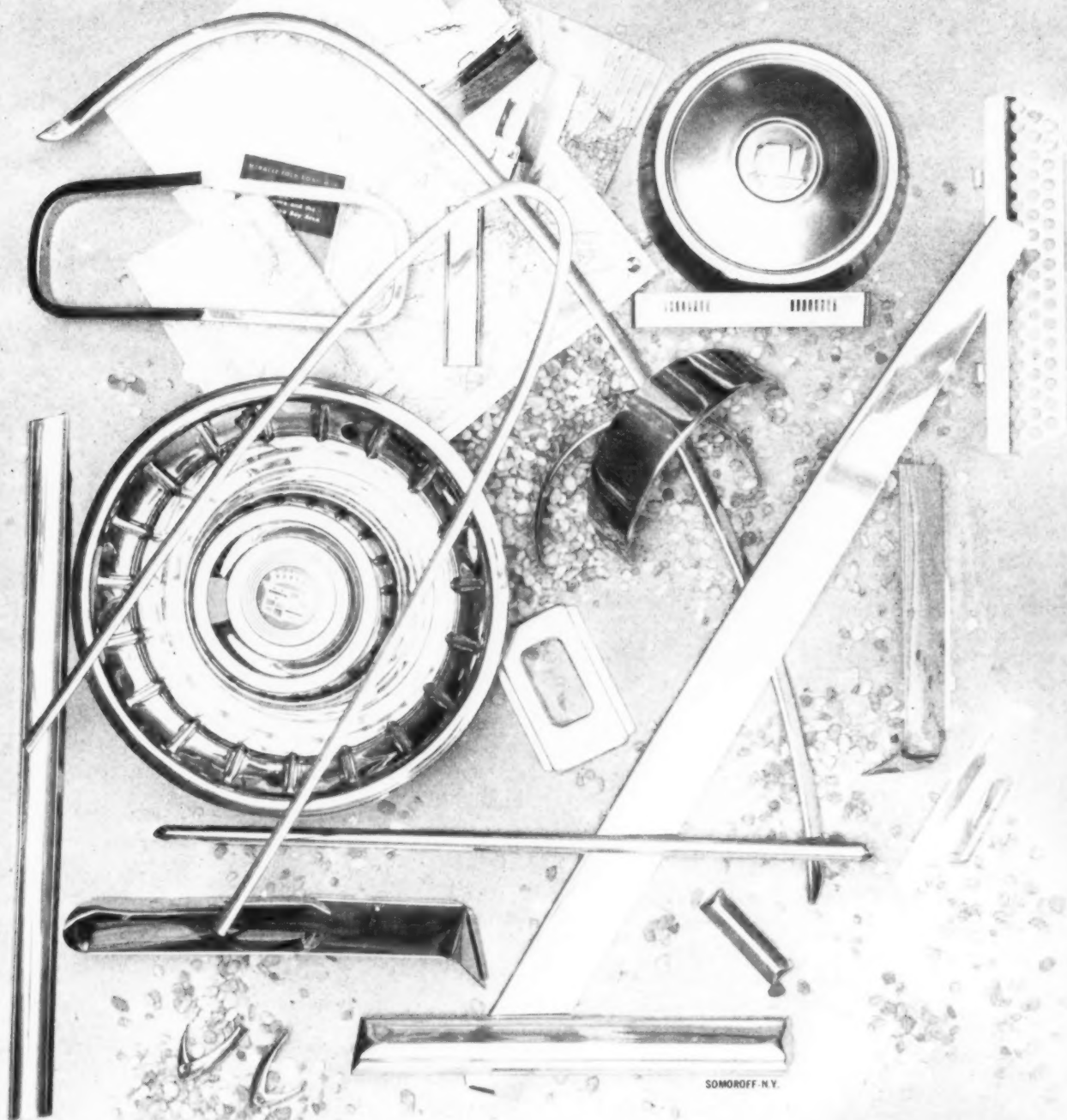
The company now headed by Mr. Stewart produces iron from magnetic or non-magnetic ores, that can be used directly in steel-making furnaces. The end product is an iron briquette equivalent in quality to No. 1 heavy melting steel scrap.

Before taking the reins of R-N Corp., Mr. Stewart was director of research and supervisor of atomic energy activities of National Lead.

Also named to executive positions in the subsidiary company are C. M. White, chairman of Republic Steel to chairmanship of R-N; Alfred H. Dewes, vice president of National Lead, and Peter Robertson, vice president of Republic Steel, named vice presidents of R-N Corp.

Use of the R-N process is available through a license agreement.

IN AUTOMOTIVE TRIM, TOO, *Sharonsteel Quality*  
STANDS OUT



Only Stainless Steel has really *lasting* beauty that defies flying stones, road chemicals, salt air, rust and corrosion season after season. Discerning automotive designers used more Sharon Stainless Steel this year than ever before for exterior and interior trim and accessories.

**SHARONSTEEL**

*For 56 Years  
a Quality Name  
in Steel*

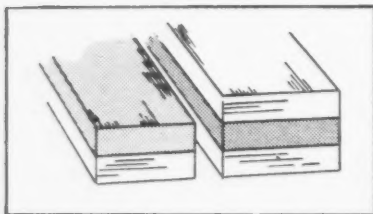
SHARON STEEL CORPORATION, SHARON, PENNA.

# BRIDGEPORT BRASS COPPER ALLOY BULLETIN



Reporting New Developments in Copper-Brass Alloys and Metalworking Methods

## Bridgeport Metal Laminates Open Up New Design Horizons



Bridgeport Metal Laminates offer outstanding design and production opportunities no single metal provides. Bonded in double or triple layers by a specially developed brazing process, they have exceptional shear strength, do not peel, chip or crack. Since the bond is a true metallurgical one, there is no porosity. Because of the variety of metals that can be bonded, laminates offer a limitless range of properties: "dual" corrosion resistance, improved electrical and thermal conductivity, greater strength-to-weight ratios, etc.

Combinations of copper, brass, stainless steel, Muntz metal, Monel, mild steel, iron and precious metals are some of the metals that are available in Bridgeport Metal Laminates.

In Duplex Laminates, either component can vary in thickness from .010 to 2 inches. They are made in sizes up to 30 inches square and, in many cases, even larger.

Triplex Laminates vary in component thickness from approximately .015 to 2 inches.

Applications for Bridgeport Laminates are many and varied—including copper/stainless steel frying pans, heat exchanger tube sheets, salt pots, electric terminal strips and contact parts.

Text samples of Bridgeport Metal Laminates are available through any Bridgeport Sales Office. Complete details on existing laminates and assistance on your special requirements are available through your Bridgeport Salesman.

For more complete details send for your copy of the new 12-page bulletin, BRIDGEPORT METAL LAMINATES.

## Brass Alloys Add Extra Performance Factor to a "Failure-Proof" Fishing Reel



Shown are four progressive steps in manufacture of line pickup assembly for Bronson's Spin King reel.

### Fishing for Ideas? This reel life story may line up some for you

The Bronson Reel Company, Bronson, Michigan, manufactures the Spin King fishing reel. An extremely important part of the Spin King is the line pickup assembly which winds the line on the reel spool. Because of its unique, ingenious design, this pickup assembly can't twist and snag the line.

#### Uses Bridgeport Alloys

The pickup assembly is made from Bridgeport 37 (70-30 Cartridge Brass) and Bridgeport 6 (Free-cutting Brass) for an internal ratchet in the assembly.

Four steps are required to form the pickup before it is hard chrome-plated prior to final assembly. Starting with quarter-hard brass strip, the pickup is first blanked and partially formed as shown above. The second step calls for trimming and piercing, followed by a reforming operation. Finally, the assembly is ground to its exact outside diameter.

The serrated brass ratchet is milled and staked into the pickup after the latter has been plated.

#### Cartridge Brass Characteristics

The great strength and high ductility of Bridgeport 70-30 Cartridge Brass

make it an ideal—and dependable—choice for this type of product. Operating without failure is one of the first demands made on this alloy. Its easy adaptability to successive and varied drawing, spinning and cold-heading operations makes it especially suitable for many finished products and components where these requirements are essential. Because of this, Bridgeport 70-30 Cartridge Brass is universally used for small arms ammunition, musical instruments, lamp reflectors and laboratory instrument cases of every description.

Free-cutting Brass offers similar advantages for parts that may require extensive machining. It's a high quality metal with excellent working characteristics.

#### Engineering Cooperation

The outstanding qualities of Bridgeport 70-30 Cartridge Brass or Bridgeport Free-Machining Brass may be just what you're looking for for your product or process. You can be sure that the full facilities of Bridgeport's Technical Service are at your disposal to help solve whatever copper alloy problems you may have. Your Bridgeport Salesman is your direct link to long experience and unparalleled research facilities. Call him today.



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Joseph D. Martin

## Best Years Ahead for Extruding

**This mechanical engineer found his medium when introduced to impact extruding 30 years ago.**

**He and the process grew together. Both have proved themselves.**

**But Mr. Martin sees in the future extruded products which are unimaginable today.**

■ In answer to the question, "Where do we go from here in impact extruding, Joseph D. Martin replies: "I can't answer that because we aren't here yet." He is convinced that impact extrusion has many applications which cannot even be imagined at the present time.

Things are happening so rapidly in the industry, he maintains, that what is new today may be commonplace tomorrow. And what is unheard of at present could be practical in the future.

**Automation Pioneer**—This enthusiasm for his specialty is a big reason why Joe Martin has become executive vice president of Sun Tube Corp., and why his company claims the greatest unit productivity of any impact extrusion plant in the world.

Back in 1927, when he joined Sun Tube as a machine designer, Joe Martin was instrumental in building one of the first automatic impact extrusion units in the industry. As plant manager in 1940, he was on the ground floor when the company reached beyond its collapsible tube specialty to experiment with rigid impacts.

**Doing the Impossible**—More recently, he had his hand in developing methods for extruding such



**JOSEPH D. MARTIN:** The impossible will become the ordinary.

things as auto transmission parts, magnetic coil boxes, electronic capacitors, diesel engine components—shapes which were thought impossible to produce a few years ago.

When Sun Tube built its new plant in Washington, N. J., in 1952, Mr. Martin was placed in command. He helped engineer a modern foundry where aluminum ingots are processed into various sized slugs for extrusion either into rigid impacts or collapsible tubes. Sun Tube claims to be the only company in its industry that produces its own aluminum slugs used in impact extruding.

**Problem Solver**—The foundry is one example of how deeply Sun

Tube has become involved in the impact extruding process. The foundry, Joe Martin points out, solved two problems. It eliminates poor quality slugs received from suppliers and it does away with dependency on outside sources of supply. Last year, the foundry processed six million pounds of aluminum.

Sitting amid a collection of rigid impacts as large as thermos jugs and as small as miniature capacitors, Joe Martin will tell all who will listen that impact extrusion is only beginning to realize its potential. The challenge of untried methods, new designs and materials, is too strong for him to ignore.

# CMP

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*for Spring Steel  
Requirements  
such as these ...*



### FLAT PARTS FOR HIGH STRENGTH WITHOUT HEAT TREATMENT

SIZE	10 x .020
ANALYSIS	1075
FINISH	Bright
HARDNESS	Rockwell C-30 Min.
THICKNESS TOLERANCE	± .001 incl. crown
WIDTH TOLERANCE	± .005
MICROSTRUCTURE	Small - fine carbides
COIL SIZE	16" — I.D. Max. coil wt. 1000#
PACKAGING	On skids — shrouded



THE **3** IN **1** SOURCE  
FOR YOUR

### COLD ROLLED STRIP STEEL

Now there are three CMP plants with facilities for production of "Restricted Specification" cold rolled strip. Strategic locations at Youngstown, Indianapolis and Los Angeles, provide the security of 3 sources of supply plus the close working relationship which these local production centers make possible.



### FORMED PARTS FOR HEAT TREATMENT

SIZE	8 x .036
ANALYSIS	1050
FINISH	Bright
HARDNESS	Rockwell B-78 Max.
THICKNESS TOLERANCE	± .0003 incl. crown
WIDTH TOLERANCE	± .005
MICROSTRUCTURE	Uniform spheroids
COIL SIZE	16" I.D. coils large as possible
PACKAGING	On skids — shrouded



Knowing exactly what you require for most efficient fabrication and most effective product performance, CMP can set up and consistently meet restricted specifications to match your most exacting demands. Often production operations can be greatly simplified or even eliminated; in most instances end-product and/or assembly costs can be reduced and quite frequently, product quality improved.

We would welcome an opportunity to explore with you the possibilities of CMP Restricted Specifications applied to your strip steel requirements.



SIZE	14 x .040
ANALYSIS	1095
FINISH	Bright
HARDNESS	95 to 105 Rockwell B suitable for blanking
THICKNESS TOLERANCE	± .0005 incl. crown
WIDTH TOLERANCE	± .005
MICROSTRUCTURE	Uniform medium size spheroids
COIL SIZE	16" — I.D. Max. coil wt. 600#
PACKAGING	On skids — shrouded

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# More Marketing Sense Is Needed

**A surprising number of firms are letting sound marketing principles go by the board.**

**An AMA survey points out the areas of laxity. Cost accounting standards would help.**

**In big companies, especially, ratio of marketing costs to sales is on the increase.**

■ Are you getting your money's worth from your marketing dollar? This may be as good a time as any to do a little sleuthing. Because if you're like a lot of other companies checked by American Management Assn., much of your marketing money is going down the drain.

Here's what AMA found in a survey of 64 companies which sent executives to a recent marketing conference:

**Six Weak Spots**—(1) Fewer than a fourth of the companies check the effect on sales of a change in product or package; (2) few check their market research, except for the sales forecast; (3) only half the consumer goods manufacturers check effectiveness of store displays; (4) less than half analyze the profitability of alternate channels of distribution; (5) less than a third measure effectiveness of an advertising appeal, and (6) none could come up with a method for getting a definite answer to the question, "How much did this advertisement do for sales?"

**Costs Climbing**—The companies surveyed spend an average of one-tenth of the sales income dollar for marketing expense. This adds up to a healthy tab since most of

them had gross sales last year in a range of \$500,000 to \$2 billion.

What's the result? More than half the companies report their current ratio of marketing costs to sales is higher than it was five years ago. The trend is especially marked among the consumer goods com-

panies. And, surprisingly enough, it's more noticeable in larger companies than in smaller ones. However, firms grossing less than \$25 million a year have a much higher ratio of selling expense to sales income than larger firms. Lower volume would account for this.

## ... How Costs Are Distorted

**Accounting Dilemma**—There seems to be little agreement among various firms as to what is a marketing expenditure and what isn't. Nine out of 10 charge all or part of their sales force recruitment costs to marketing. More than eight out of 10 include fringe benefits to marketing employees.

But fewer than two-thirds include the shipping or warehousing of goods as marketing costs. Two out of three charge the cost of accepting goods returned by customers to marketing, but fewer than half so charge the cost of extend-

ing credit to customers or of collecting from them. It indicates that many companies may be kidding themselves into believing they get a more favorable return on their marketing dollar than they really do.

**Criteria Needed**—All this is to show the need for some standard of cost accounting in the field of marketing. It would make life easier for accountants and makers of surveys. But most important as far as your company is concerned: Are you getting the most out of your marketing budget?

## Nuclear Power Speeds Up

**Getting Closer**—If you've been waiting for nuclear power development to get further along before jumping into the competitive swim, it might be later than you think. The atomic energy program is gaining speed.

Those who attended the Nuclear Powered Ship Symposium sponsored by the Department of Commerce came away with the feeling that the nuclear age for merchant shipping is not far away.

**Big Test Coming**—Plans call for launching the first nuclear-powered

atomic merchant ship in 1961. It now looks as though the first big opportunity for atomic energy to compete with conventional power in the U. S. will be in the maritime industry.

Competitive designs for a power plant for the proposed ship have been submitted by a number of companies including American Machine & Foundry Co., The Babcock & Wilcox Co., Westinghouse Electric, General Motors, General Dynamics, Ford Motor Co., and Atomic International. They're not missing the boat.

# Will Reuther Barter Short Week?

## He Might Trade For Bigger Paycheck

**The auto workers are making a heap of noise about the short work week.**

**But it could be a bludgeon to force a higher-than-usual pay hike for workers.—By H. R. Neal.**

■ Is Walter Reuther using the short work-week to bludgeon the auto companies into giving him a hefty pay boost? The agile-minded auto union chief is keeping his own counsel on this point. But few would be surprised if he tried to barter the short-week into hard cash.

Outwardly, Mr. Reuther is beating the drums for a four-day week. His union's newspaper, "The

United Automobile Worker", has carried reams of copy on it. The rank-and-file is being conditioned to the idea of more leisure, more time to devote to cultural and civic pursuits.

**How To Loaf**—The UAW has set up a study and education group to come up with ideas on how the workers can best use the added spare time. The men on the assembly lines are being "educated" toward a better and fuller life. Union photographers set up pictures showing workers busy in home work shops, on picnics with happy families, fishing and hunting in the wilds of Michigan.

But does Mr. Reuther really want

the four-day week at this time? Or would he settle for an added sweetener in the pay check and postpone his drive for a shorter work-week until another day—until a "further study" can be made, for example?

**Reuther Hedges** — A possible clue to Mr. Reuther's real feeling is that he has been doing just a wee bit of hedging in his public remarks. He says "studies indicate" the need for a shorter work-week, that "our workers feel" such-and-such.

It's an under-statement to say that the short work-week poses awesome financial problems for the companies involved, and for the union itself. Chances are that Mr. Reuther's announced goal of a four-day week will come in fits and snatches over a good many years. And the first step likely will be hedged in with a liberal sprinkling of qualifying clauses.

**Trouble Ahead?** — One more point: If Mr. Reuther pushes for too much money in exchange for "forgetting" the short week, there will be trouble. The companies may be willing to "give" something, but if the asking price is too high, they'll get their backs up.

Reuther has said he doesn't know what form a shorter work week will take if it comes. It could be fewer hours per day. It could be a day less each week. The workers evidently prefer the latter. The union will hold a special meeting in Detroit next January to formulate its demands. Auto contracts expire about June 1, 1958.

As envisioned, the shorter week would be accompanied by an increase in take-home pay for workers through pay boosts. The union says

**AFL-CIO**

**Collective Bargaining**

**REPORT**

OCTOBER 1956

Vol. 1, No. 10

**REDUCTION IN HOURS**

This is a brief report on different aspects of shorter work weeks as they are being discussed in the various labor unions.

The unionists, according to labor and research departments of some 50 unions, are engaged in studying the various aspects of the problem of shortening the work week. The unionists are generally in favor of shorter work weeks, but some of the points developed may be subject to future modification regarding on how to carry them out.

**Reasons for Shorter Week**

The major factor in labor relations is the pay differential in most cases from the union versus non-union.

It was generally agreed that shorter work weeks would mean a reduction in the hours of the worker and a consequent loss of income. Longer hours generally mean higher production and higher income. But some of the points developed may be subject to future modification regarding on how to carry them out.

Concurrent considerations, particularly the need for shorter working opportunities, also come into the picture, but in most cases mean a shorter work week.

There are still some questions as to what it would mean to have shorter work weeks, but it is generally the opinion of the labor unions to plan for shorter work weeks in the future.

Although most of the labor unions are in favor of shorter work weeks, it is not a general rule in all labor unions. Some of the points developed may be subject to future modification regarding on how to carry them out.

**Shorter Week and Labor Unions**

Shorter work weeks are being discussed in many labor unions. Some of the points developed may be subject to future modification regarding on how to carry them out.

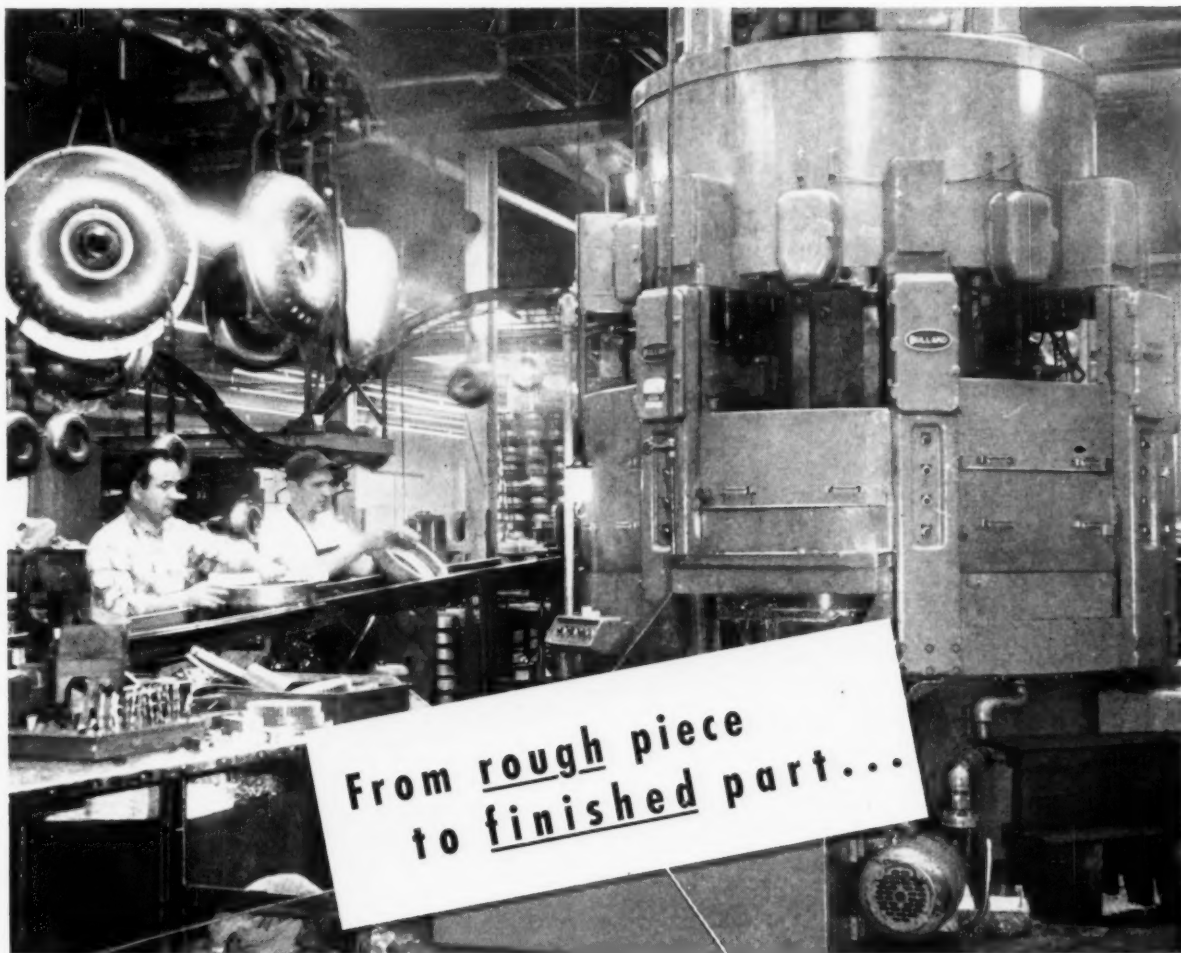
**Shorter Week and Labor Unions**

Shorter work weeks are being discussed in many labor unions. Some of the points developed may be subject to future modification regarding on how to carry them out.



**WILL HE TRADE?** Walter Reuther's auto union is spearheading labor's drive for the short work week. And the aggressive labor leader is making a lot of noise about it. The big unanswered question, though, is whether Reuther will trade for hard cash.





From rough piece  
to finished part...

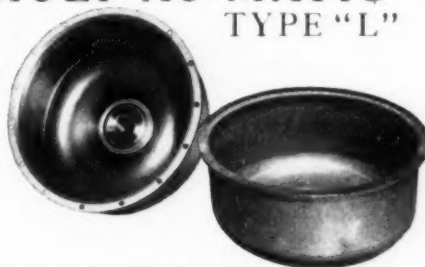
... all automatically handled by

**BULLARD**

Transferred to and from the machine by roller conveyors, rough piece is loaded, completely machined and finished part is unloaded without any manual effort. The machining operations performed at seven stations include boring and counterboring, rough and finished facing, rough and finished turning, drilling and chamfering — eighteen separate operations in all.

"We went to Bullard on this job" according to the Master Mechanic of a leading manufacturer of automotive clutches, "because our program definitely called for a multiple spindle machine and the Bullard Mult-Au-Matic, Type "L" was best suited for the operation. Actually, its greater number of stations, larger spindles and greater power made it the only multiple spindle machine which fitted the job."

MULT-AU-MATIC  
TYPE "L"

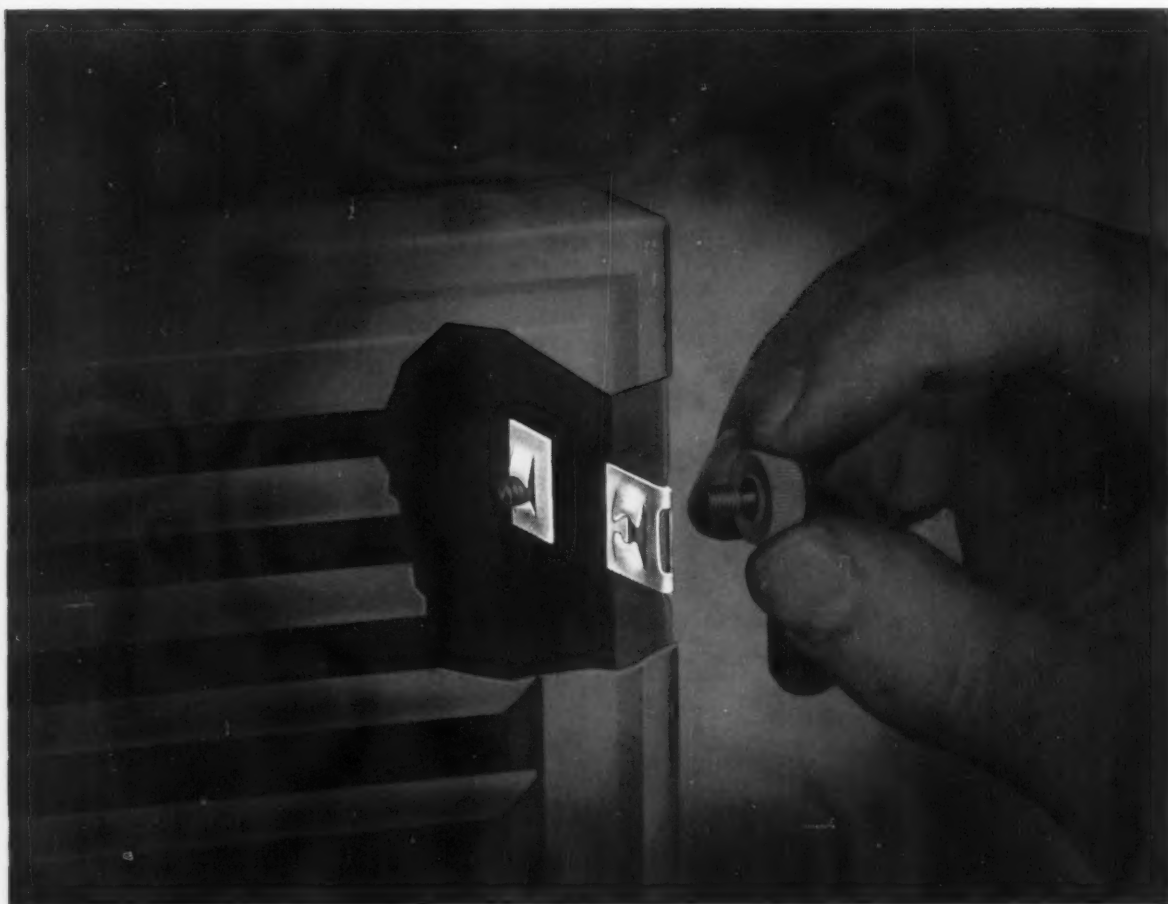


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## 6 SPEED NUTS® replace 10 fasteners ...and costs drop 80%!

Six Tinnerman SPEED NUTS replaced 10 weld nuts on the Gibson Window Air Conditioner...and production costs dropped more than 20 cents per unit!

Working with the designers at Gibson Refrigerator Company, Division of Hupp Corporation, Tinnerman engineers suggested using four "J" Type SPEED NUTS to fasten the front panel to the air conditioner cabinet. These one-piece, self-locking, spring-steel fasteners snap in place by hand; are self-retained in screw-receiving position. They also used two Flat Type SPEED NUTS to fasten the window mounting channel to the cabinet.

By eliminating ten weld nuts, Gibson was able to divert a spot welding machine to other uses, reduce materials handling, simplify and speed up assembly. They cut costs right down the line — without sacrifice of product quality!

Savings like this are being made every day when manufacturers switch from ordinary fasteners to Tinnerman SPEED NUT Brand Fasteners. Over 9000 variations are available to handle practically any fastening job, from tiny transistors to huge freight cars.

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## Automotive Production

WEEK ENDING	CARS	TRUCKS
Aug. 3, 1957	118,252	21,134
July 27, 1957	119,857	21,798
Aug. 4, 1956	111,157	20,764
July 28, 1956	111,247	21,426
TO DATE 1957	3,914,000	676,500
TO DATE 1956	3,709,000	694,000

\*Estimated. Source: *Ward's Reports*

this can be done without substantially hiking the cost of products to consumers. Improved production techniques and corporate profits will make up the cost difference, it says.

**It Sounds Good**—To some the arguments sound good. Some industries now have a short work week. Rubber companies work six hours, six days. Printers have a 37½ hr week, as do many office workers.

How has the short work week worked out where it exists? "Moonlighting," the holding of two jobs, has popped into prominence lately. Rubber workers are said to have the highest incidence of dual-job-holding of any group of workers. They also have a high hourly pay rate.

UAW officials frown on moonlighting, and admit it will be a problem that comes to the auto industry with a short work week. They concede they don't know what they could do about it.

**How Dual Jobs Hurt** — Moonlighting cuts down job opportunities for the unemployed. It takes employees away from their families and takes more of their time than a fifth day at work. It aggravates a situation the union says it wants to correct. Also, second jobs are often non-union. The National Industrial Conference Board says there are "several" million moonlighters in the U. S.

The impact on the nation's economy of a 20 pct cut in the work week would be staggering. Just how staggering can be seen using U. S. Dept. of Commerce figures for 1956 assuming that the short week were to spread to all industry.

In 1956 workers totaled 61.8 million. The Gross National Product (goods and services) was valued at \$412.4 billion.

Some 15 million more workers would be needed, but only about three million would be available. The value of goods and services would run about \$1 billion a week short of those needed to maintain a constant standard of living.

Census Bureau projections of the next ten years show a rapid growth in the nation's population. However, the growth will be concentrated in upper and lower age groups. Population as a whole will climb by 28 million during this time. But there will be a decline of nearly 2 million persons in the 25-34 age group, the prime labor market. Youngsters and oldsters will make added demands for goods and services that must be met by a smaller work force.

**Productivity Lag**—The increasing drive for a higher standard of living is being met by an increase in wages that averages about 5 pct annually. But real gains are being

held back by a lag in productivity. Productivity is increasing at the rate of only 2½ pct.

It might be noted the majority of labor flare-ups in the auto industry this year have resulted from worker resistance to attempts to improve productivity.

**What About Cost?**—How much would it cost to reduce the work week 20 pct but maintain current take-home pay?

Employees earned \$239.1 billion working 133.4 million hr. Average hourly earnings were \$1.79. Corporate profits before taxes amounted to \$43.4 billion.

To maintain the same wage, hourly earnings would have to be boosted to \$2.24. Some 26.7 billion additional hours would have to be worked to equal goods and services for the 1956 standard of living. The hours must be made up at overtime rates of \$3.36 an hr. The cost of this overtime reaches \$89.7 billion. Corporate profits could only pay half of this, neglecting taxes that must also be paid. Substantial hikes in the cost of goods and services would be the only way out.

## THE BULL OF THE WOODS

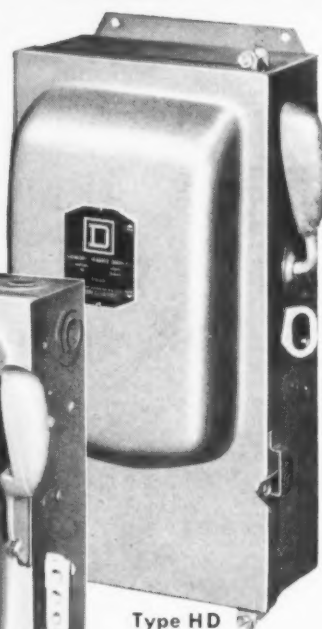
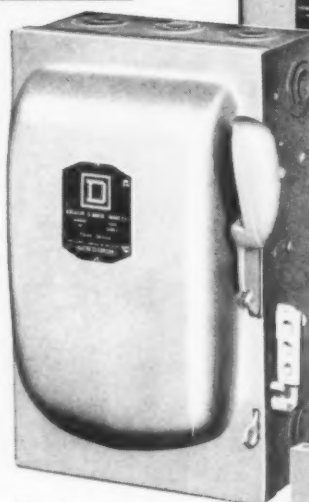
By J. R. Williams



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*Square D Safety Switches cost no more  
— why settle for less ?*

DESCRIPTION	HEAVY DUTY New	NORMAL DUTY formerly Types H, S, or A	LIGHT DUTY formerly Types D or G
Rating-Ampere Voltage	30—600 250 or 600V AC, DC	30—1200 250 or 600V AC, DC	30—200 250V AC
Enclosure	NEMA 12 • Industrial Use (Gasketed) NEMA 4 & 5 • Water-tight & Dust-tight NEMA 7 • Explosion-resisting Class I—Group D NEMA 9 • Explosion-resisting	NEMA 1 • General Purpose NEMA 3R • Raintight	NEMA 1 • General Purpose NEMA 3R • Raintight
Horsepower Rating	NEC Fuse Ratings Dual-Element Fuse Ratings	NEC Fuse Rating Dual-Element Fuse Ratings	NEC Fuse Rating
Operating Mechanism	Quick-Make, Quick-Break Independent of Handle	Quick-Make, Quick-Break Independent of Handle	Positive Make, Positive Break Spring Assisted
Cover	Interlocked & Padlock Attachment	Interlocked & Padlock Attachment	Padlock Attachment
Plating—Current Parts	Extra-Heavy Silver	Silver	
Endurance	Maximum Endurance Far Exceeds UL Standards	Exceeds UL Standards	Meets UL Standards



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# Congress Eyes Tax Cut in '58

## Relief for Personal Taxpayer Possible

**Congressional leaders are talking confidently about across-the-board tax cuts next year.**

**While slashes on individual taxes could be voted, there's little hope for drop in corporate rates.—By G. H. Baker.**

■ Pressure for tax cuts is building up in Congress. Despite frowns from the Eisenhower Administration over the "wisdom" of cutting taxes next year, leaders on both sides of the political aisles in Congress talk confidently of voting across-the-board cuts in 1958 for both big and little individual taxpayers.

There's almost no talk of reducing the rates applying to corporation income. More and more, it looks like the wartime rate of 52 pct will be around for a long time. Only a major business recession will convince Congress that this rate must be trimmed.

**Trim For Small Firms** — However, there's some hope for reducing the rate applying to smaller firms. President Eisenhower's upcoming Conference on Small Business (September 24-26) will look into this need, and may quite possibly recommend that next year's session of Congress cut the rate applying to firms that earn less than \$25,000 a year.

Ike recently wrote Chairman Cooper of the House Ways and Means Committee that he opposes any tax cut law this year, but he pointedly left the door wide open for rate reduction in 1958.

Revenue-wise, the picture is promising for tax reduction. Collections are running ahead of the Treasury's hopes. If the present

rate of collections holds up, the Treasury may find itself next year with a surplus of as much as \$2 billion. Of course, federal spending is on the upward trend too. But as long as revenue collections continue to outrun expenditures, the climate for tax cuts in 1958 shapes up as the most favorable in years.

### Army Sees Rebuilding Impossible in War

The Army is now convinced that a future war will allow no time for repair and rebuilding of military equipment after the bombs start dropping. So their goal now is to have plenty of weapons, trucks, and other materiel for fighting a war on hand.

"We can no longer depend on the availability of standby production facilities to rebuild unserviceable equipment in large quantities after a war starts," says Lt. Gen.

Carter B. Magruder, deputy chief of staff, Army Logistics.

**Transport Vulnerable** — "In the next war, our transportation system will be more vulnerable. Ports may be put out of action for considerable periods by atomic attack."

"This threat to our transportation system indicates not only that at the beginning of the war we should have large equipment reserves already located in the vicinity of the battlefield, but also that we should seek to reduce to the bitter minimum the supplies that we have to deliver after war starts."

### Living Cost Steadying

The cost of living will level off this month, the government's price experts say. It's been climbing steadily each month for nearly a year. As a result, the Bureau of Labor Statistics index now stands at 120.2 pct of 1947-1949 prices, the highest ever.

## Tax Aid for Property Disposers?

**Exemption Proposed** — There's a glimmer of hope that tax relief will be authorized for firms that have to sell property as a result of antitrust decisions.

Under the terms of legislation approved by the House Ways and Means Committee, a company forced to divest itself of part of its property could take an exemption from income tax on the profits of any such sales. However, the proceeds would have to be reinvested in other property.

**Could Help Du Pont**—The pro-

posal is a long way from being enacted into law, but favorable consideration shown the plan by the taxwriting Ways and Means Committee indicates it has some chance of success.

Some lawyers believe this exemption would be of great benefit to Du Pont when the time comes for it to sell its huge holdings in General Motors. But this interpretation is subject to debate and possibly court decision.

The Treasury is opposing the plan and the Senate probably won't act on it until next year.



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• You get more than chain when you buy ACCO Registered Sling Chains. For you get "4 aces of extra value" which help make ACCO Registered Sling Chains the standard by which all other slings are judged. Here are the aces that make the winning hand:

**First Ace: Accoloy X-weld 125 Chain**, used where extra strength is desired. This patented chain (Pat. No. 2763768) has a king-sized welded area for exceptional strength—and it does not kink, but hangs straight as a die.

**Second Ace: ACCO's new Shaped Master Link**, which, thanks to its unique shape, withstands deformation under loads up to 18% greater than a conventional round-section link can.

**Third Ace: The ACCO Registration Ring**, bearing its own serial number as evidence that every component has been tested before assembly, and the assembled sling proof-tested to twice its working load limit before shipment. The Acco Registration Ring is the symbol of acco quality—the finest.

**Fourth Ace: The ACCO Registration Certificate**, attesting to the field-tested design and proof test of complete sling to twice the working load limit. It is signed by American

Chain & Cable Company, Inc., and is furnished with each ACCO Registered Sling Chain.

Only in ACCO Registered Sling Chains do you receive these "4 aces of extra value." Still another bonus: all hooks are Magnaflux-tested. Remember, these features are over and above the characteristics of strength, safety, long service life and long-pull economy that have made acco Registered Chain Slings industry's choice for an endless variety of lifting jobs.

See your ACCO Registered Chain Sling Distributor about your sling chain requirements. His seasoned counsel is available without cost or obligation. If you don't know his name, write us at York, Pa.

### WHAT "ACCO REGISTERED" MEANS

- 1 The best material
- 2 Unit safety factor (on bodies, rings, links, hooks)
- 3 Proof test of complete sling to twice the working load limit
- 4 Actual field service test of each design
- 5 Metal identification ring on each sling
- 6 Signed Registry Certificate with each sling

### American Chain Division AMERICAN CHAIN & CABLE

Bridgeport, Conn. • Factories: \*York and \*Braddock, Pa.

Sales Offices: \*Atlanta, Boston, \*Chicago, \*Denver, Detroit, \*Houston, \*Los Angeles, \*New York, Philadelphia, Pittsburgh,

\*Indicates Warehouse Stocks \*Portland, Ore., \*San Francisco



# Aircraft Changes Product Mix

## Outlook: Fewer Planes, More Missiles

**Further stretch-outs, cutbacks and cancellations may be due in aircraft production.**

**But West is already deep in missile making and primed to step it up.—By R. R. Kay.**

■ More stretch-outs, cutbacks, cancellations, and a change of product mix are in the works for the West Coast aircraft industry and its suppliers.

But there will still be billions of dollars in good solid orders to go around.

**No Output Drop?**—The Air Force stretch-outs, Washington sources indicate, will add an extra year to the time set for completing production of the F-101, F-104 and F-106. While the action is believed a device to save some money, the Air Force says output rates will not drop lower than current levels.

The military's comment on the stretch-out was brief. Here's the official statement: "The Air Force is advising McDonnell Aircraft Co., St. Louis, Mo., Lockheed Aircraft Corp., Burbank, Calif., and Convair, San Diego, Calif., of certain changes in future production rates of some fighter aircraft. It is believed that none of the changes will foreseeably reduce employment below present levels."

**Bombers Not Obsolete**—Since the West Coast makes about 50 pct of the nation's aircraft, there's naturally a lot of serious talk about the Pentagon's stepped-up shift to missiles. And worry, too. What will it do to the industry and to the thousands of metalworking plants that supply it?

In all the talk, one major point

is overlooked. No competent authority suggests that we are approaching or even entering a phase-out of manned aircraft.

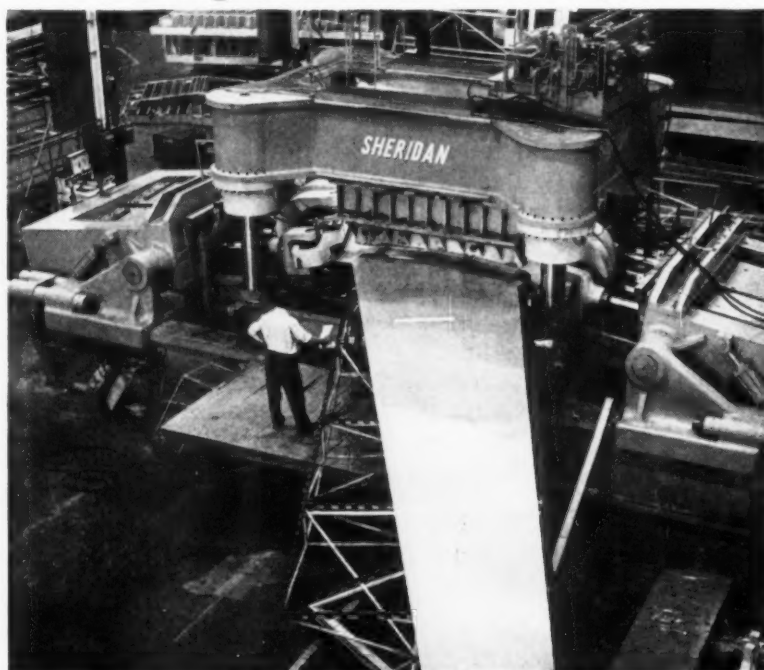
To the contrary, a man who knows, Defense Dept. Deputy Secretary Donald A. Quarles, has this to say: "We are certainly not in it (phase-out of manned aircraft). And I have never heard any military man suggest that we are even approaching it. It is my own opinion that it is remote enough that we ought not even talk about such a thing at this time."

**\$10 Billion A Year**—If you work for the West Coast aircraft indus-

try bear this in mind. For the next several years military aircraft procurement dollars will stay at \$10 billion per year for the nation. Breakdown: Air Force \$7 billion. Navy \$2.5 billion, and Army about \$1 billion.

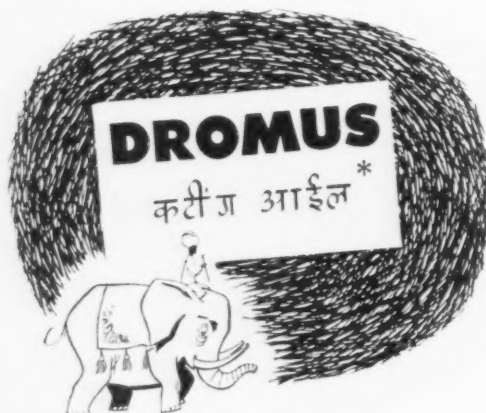
However, there will be a big shift in how the money is spent. The industry will make lots fewer planes and more missiles. Manned aircraft outlay will drop from \$4 billion to about \$2 billion. Missile spending will jump from \$.5 billion to \$2.8 billion. And this new business will balance out the loss of aircraft contracts.

## Wing Skin Gets Four-Way Stretch



**HELD AND DRAWN:** At Douglas Aircraft plant, retention clamps in stretch press hold wing skin of DC-8 jetliner while jaws draw it down over a die which rises under it to form a dihedral contoured angle shape.

No matter how you say it...



\*TRANSLATION: CUTTING OIL

The performance and the brand  
are the same around the world

**Other Outstanding  
Shell Industrial Lubricants**

**Shell Tellus Oil**—for closed hydraulic systems

**Shell Alvania Grease**—multi-purpose industrial lubricant

**Shell Turbo Oil**—for utility, industrial & marine turbines

**Shell Rimula Oil**—for heavy-duty diesel engines

**Shell Talona R Oil 40**—anti-wear crankcase oil for diesel locomotives

Shell Dromus Oils, a quality line of soluble cutting oils, permit higher speeds and greater feeds while extending tool life. They have excellent wetting and cooling properties and are not sticky or greasy.

Dromus® Oils have the added advantage of being easy to mix in hot or cold, hard or soft water. They form emulsions which remain stable in practically any concentration required in the shop.

Today Dromus Oils are available to your customers abroad. You can be sure that they will enjoy the same efficient performance your domestic customers rely upon.

For more information, write Shell Oil Company, 50 West 50th Street, New York 20, N. Y., or 100 Bush Street, San Francisco 6, California.

**SHELL DROMUS OILS**





# Builder Predicts Fall Spurt

## Says Pent-Up Demand Will Boil Over

**Reports indicate buyers have been holding up for clearer picture of business conditions.**

**Consensus is that they just can't wait any longer.**

**German tool show stacks up as general display of metalworking equipment. — By E. J. Egan, Jr.**

■ "Our distributors expect machine tool sales to pick up in September." So says Joseph T. Vinbury, sales manager, Abrasive Machine Tool Co., E. Providence, R. I.

"The men who sell for us, and other builders, tell us they sense a pent-up demand for new equipment," Vinbury continues, "and they expect it to start boiling over next month."

"It's certain that many firms need new tools, but they've been holding back, waiting for a clearer picture to develop out of murky business conditions. Now it looks as if a lot of them aren't going to wait much longer; the plain fact that they need something is starting to overcome a lot of hazy objections. That's the story we get."

**Ready of Business**—Abrasive is ready with a display window full of new precision surface grinders, built to entirely new designs—"operator engineered" — the firm calls them.

The new grinders also mark a break from Abrasive's traditional sales pattern. According to the firm's executive vice president, N. Douglas MacLeod, Jr., the new line is aimed at both the tool room and production grinding markets. Any model can be equipped for completely automatic operation.

**German Show** — The Fifth European Machine Tool Exhibition, to be held at Hanover, Germany, September 15 to 24, is shaping up as the biggest of the series to date. Strictly a West European project, it will have 1000 exhibitors, including most of the large nations in the western area.

Although it's listed as a Machine Tool Exhibition, the Hanover affair could be described as an across-the-board display of metalworking equipment.

**Wide Variety** — In addition to the usual machine tools, exhibits will show accessories of all types, welding equipment, die casting machines for metals and plastics, heat treating equipment, and every conceivable type of testing and measuring instrument.

Manufacturers from the Soviet orbit and China will not be exhibiting, but numerous buying teams and "interested observers" are expected.

Numerous U. S. visitors will be checking up on European rivals, helping European subsidiaries or licensees demonstrate equipment built in Europe to American designs or looking for good bargains in standard and special tools.

**Deadline**—August 31 is the final deadline for submitting your personal, corporate or industry-wide views on the useful lives of capital equipment to the Commissioner of Internal Revenue, Washington 25, D. C. A five-man Advisory Group is reviewing all suggestions received up to the dead line date.

## GEAR INDEX 1956/57

Base 1947-49=100

	0	50	100	150	200	250	300	350	
JUL 56									286.7
AUG									219.5
SEP									230.5
OCT									299.8
NOV									216.2
DEC									235.7
JAN 57									259.3
FEB									239.5
MAR									262.4
APR									221.7
MAY									263.2
JUN									215.9

Source: American Gear Manufacturers Assn.

## INDUSTRIAL BRIEFS

**Brass Bows to Multi**—Maj. Gen. D. H. Baker, becomes the new president of Capital Airlines, with headquarters in Washington. Gen. Baker was a former Air Force executive in procurement and production matters, Air Materiel Command, Dayton, O.

**New Arrival**—Penco Metal Products, Div. of Alan Wood Steel Co. has placed into operation a new fabricating plant. To be located in the Delaware Valley, the \$2.5 million facility will manufacture steel storage equipment.



**NEW REP:** Irving E. Hand, who joins The IRON AGE sales staff, with headquarters in New York City.

**Tie-In**—Milton Roy Co., manufacturing engineers of Philadelphia, has purchased Anders-Lykens Co. of Lykens, Pa. Negotiations have resulted in the formation of the Anders Div. of Milton Roy Co. This merger broadens Milton Roy's product lines for instrumentation and control systems for the chemical processing industries.

**Oil Country Deal**—Bethlehem Supply Co., subsidiary of Bethlehem Steel, has been named distributor of oil field casing and tubing manufactured by Lone Star Steel Co. According to Lone Star's president, this is a straight sales arrangement and covers only oil country goods.

**Ad Talks**—The Association of National Advertisers, Inc. has formed a representative group to meet with the A.N.A. Committee to discuss mutual problems of industry-wide importance. Mr. G. Carroll Buzby, president, Chilton Co. is among the members of the publishers' group.

**Hot Pitch**—Koppers Co.'s Tar Products Div. has opened its plant in Arroyo, W. Va. This facility is designed to upgrade certain high boiling chemicals that are constituents of coal tar. Purpose of the plant is to produce niacin and development work on production techniques and applications for certain coal tar chemical fractions.

**Motor City Move**—Wheelock, Lovejoy & Co., Inc. has opened an office and warehouse to serve the Detroit area. The building is located in Warren, Mich., and will stock a complete line of Wheelock, Lovejoy Hy-ten, A.I.S.I. and S.A.E. alloy steels.

**Cemented**—Chicago Concrete Breaking Co. and Chicago Concrete Construction Co. have been consolidated into one organization. Selection of the new company name, The Edward Gray Corp., is in tribute to the man who founded Chicago Concrete Breaking Co. 36 years ago.

**Latest Word**—U. S. Steel Corp. has published its seventh edition of "The Making, Shaping and Treating of Steel." The volume offers users and makers of steel a comprehensive summary of present day theory and practice. It also covers all phases of iron and steel production from raw materials to finished products.

**Nothing Wasted**—Stauffer Chemical Co. is building an acid plant at Hammond, Ind. The 400-ton-per-day capacity sulfuric acid regeneration plant will process oil refinery sludge acids. Construction of the \$4 million facility is scheduled for production next July.

**Sourdough's Dream**—An airborne laboratory, contained in a Sikorsky S-55 helicopter, is now being used by Aero Service Corp., Philadelphia. The helicopter, with its electronic instrumentation, explores in hours ground which formerly took days or weeks to cover. It is being used to hunt for additional deposits of ores, rare earths and oil.

**Renamed**—The S. S. Robt. B. Wallace recently acquired by Republic Steel Corp., was rechristened the S. S. Peter Robertson. Sponsoring the ceremony held on the Cuyahoga River was Mrs. Peter Robertson, wife of Republic's vice president, research and planning. The ship was tied up at the Republic's Upper Dock. Wilson Transit is operator of the Republic fleet.

**For Science's Sake**—The Institute of Management Science will sponsor a conference on "management science in the iron and steel industry". The international meeting will be held in Detroit on Oct. 18, 1957. Theme of the conference will be the introduction of the use of quantitative methods in management decision making in the iron and steel industry.

**Double Stamped**—The Hydraulic Press Mfg. Co., Div. of Koehring Co., Mount Gilead, O. has acquired the Henry & Wright Div. of Emhart Mfg. Co. Sources at Koehring estimate the price will be in excess of \$1¼ million. Henry & Wright will operate as a department of H-P-M. The purchase makes it possible for H-P-M to enter the mechanical press field.

**Extruding Circumstance**—Reynolds Metals Co. has opened its \$5.5 million extrusion plant in Bellwood near Richmond, Va. The new aluminum fabricating facility is capable of increasing the light metals industry's productive output by 2 million lbs per month. Reynolds also has a foil plant, smelting plant, packaging plant and two research laboratories in Richmond.

# HIGH PURITY MAKES THE DIFFERENCE

## Electrolytic Manganese Improves Melting Practice

Stainless steel makers have found electrolytic manganese to be a great aid in simplifying melting operations, minimizing impurities, and facilitating closer control of composition, particularly for producing the new 200 series with higher manganese content.

Electrolytic manganese can also be used advantageously for the production of non-ferrous alloys, including high-temperature and electrical resistance alloys of aluminum, copper, and zinc. It is free of elements which adversely affect the properties of non-ferrous alloys.

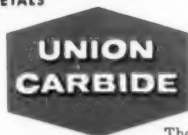
ELECTROMET electrolytic manganese is ideal for all applications requiring manganese metal of very high purity and low iron content. It has a minimum purity of 99.9 per cent on a metallic basis and is the thickest plate commercially available. For stainless steels requiring nitrogen for austenite stabilization at hot-working temperatures, ELECTROMET also offers a nitrogen-bearing grade of electrolytic manganese.

This illustrated folder on electrolytic manganese and technical assistance in the use of ELECTROMET alloys and metals are available on request. Write or phone the nearest ELECTROMET office: Birmingham; Chicago; Cleveland; Detroit; Houston; Los Angeles; Phillipsburg, N.J.; Pittsburgh; San Francisco. In Canada: Electro Metallurgical Company, Division of Union Carbide Canada Limited, Toronto. ELECTRO METALLURGICAL COMPANY, Division of Union Carbide Corporation, 30 East 42nd Street, New York 17, N. Y.



Cans containing 50 lbs. of ELECTROMET electrolytic manganese are a convenient means of charging high-purity manganese in the production of stainless steel.

**Electromet**  
FERRO-ALLOYS AND METALS



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## Wheelabrator® SUPER TUMBLAST® speed and capacity smash bottle neck in cleaning room

Replaces 10 tumbling barrels, 2 standard blast mills at

Wilmington Castings Co.

Producing 30 to 35 tons of grey iron castings daily, Wilmington Castings Co. of Wilmington, Ohio, found the cleaning room had difficulty keeping pace with grinding operations. Eleven tumbling mills and two old airless blast cleaning machines were hard pressed to do the job requiring a total of 56 man hours a day for operation.

Installation of a 28 cu. ft. Wheelabrator Super Tumbblast has brought these results:

1. 28 to 34 tons of castings are cleaned in one 8-hour shift with ease.
2. Nine of the tumbling barrels have been scrapped.
3. One blast mill is retired, the other is held in reserve.
4. Two men have been eliminated from the cleaning department.

Investigate the super capacity and super savings of the Super Tumbblast for your cleaning room, too. Solve your cleaning problems and make new profits.

### THESE CATALOGS TELL YOU HOW SUPER TUMBLAST CAN HELP YOU

The Super Tumbblast is available in 28, 14 and 7 cu. ft. sizes. Respective catalogs are 125-D, 129-D, and 132-D. Write for any or all of them today.



# WHEELABRATOR

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510 S. BYRKIT ST.

MISHAWAKA, IND.

World's Largest Manufacturers of Airless Blast Cleaning Equipment



**Avery C. Adams** will be chief executive officer, Jones & Laughlin Steel Corp. effective Oct. 1, 1957. Mr. Adams is now president and chief operating officer.

**R. L. Strawbridge**, appointed vice president and general manager, Wales-Strippit Co. of Akron, New York, unit of Houdaille Industries, Inc.; **R. A. Johnson**, named general sales manager.



**Dr. Alex Stewart**, elected president and general manager, R-N Corp., owned equally by National Lead Co. and Republic Steel Corp.

**H. B. Wilgus**, elected vice president, sales, The Electric Products Co., Cleveland, O.

**V. M. Exner**, elected vice president, Chrysler Corp., Detroit.

**R. A. Powley**, appointed president, Pesco Products Div., Borg-Warner Corp., Bedford, O.



**F. M. Goodwin, Jr.**, appointed asst. treasurer, U. S. Steel Corp.



**D. H. Spicer**, elected vice president, industrial sales, Ferry Cap & Set Screw Co., Cleveland.

**R. S. B. Holmes**, appointed asst. director, safety staff services, U. S. Steel Corp.

**S. J. Miller**, appointed asst. director, Plant Engineering Div., Joseph T. Ryerson & Son, Inc., Chicago.

**S. J. Mack**, promoted asst. to sales vice president, U. S. Steel Homes Div., U. S. Steel Corp.

**J. P. Beyser**, appointed general manager, Verona, Pa., plant, The Ingalls Iron Works Co., Birmingham, Ala.; **J. C. Agey**, promoted to asst. manager, Verona, Pa., plant.



**E. B. Ott**, elected president, Ray-O-Vac Co., Madison, Wis.

## MEN IN METALWORKING

**J. R. Russell**, elected treasurer, Illinois Tool Works, Chicago.

**L. S. Beeler**, appointed asst. manager, chemical and petroleum market sales, Reynolds Metals Co., Louisville, Ky.

**R. E. Stillman**, named resident manager, Youngstown, O., sales office, Jones & Laughlin Steel Corp.

**E. H. Schaeffer**, appointed production manager, Buick-Oldsmobile-Pontiac plant, Atlanta, Ga., and **S. R. McCleary**, named director of work standards, B-O-P Assembly Div., General Motors Corp.



**C. J. Heyda**, appointed manager, Hammond, Ind., coil plant, American Can Co.

**J. R. Carter**, appointed manager, operations, Eastern Div., Wyman-Gordon Co., Worcester, Mass.

**T. L. English**, promoted to general superintendent, construction, The Rust Engineering Co., Pittsburgh.

**C. A. Tarter**, appointed asst. superintendent, tin mill, Kaiser Steel Corp.; **A. G. Trott**, appointed asst. superintendent, Hot Dip and Finishing Depts., tin mill; **P. E. Nelson**, named asst. superintendent,

Cold Reduction Dept., tin mill; **R. W. Bush**, appointed general foreman, cold reduction, tin mill, Fontana plant.

**J. H. Geer**, elected asst. comptroller, ACF Industries, Inc.

**Roy Dahlstrom**, appointed director, research, National Lead Co., New York; **C. L. Schmidt**, appointed technical director, Titanium Div.



**J. S. Vollmer**, appointed purchasing agent, Electro-Motive Div., General Motors, La Grange, Ill.

**G. M. Shibley**, named manager, territorial sales, The Patterson Foundry & Machine Co., E. Liverpool, O.

**J. F. Pacheco**, appointed special technical advisor, Commercial Detergents Dept., Calgon Co., Div. of Hagan Chemicals & Controls, Inc., Pittsburgh.

**R. R. Bowman**, appointed district sales manager, Buffalo area, Harbison-Walker Refractories Co.

**J. L. Lewis**, appointed plant manager, Shiffler plant, American Bridge Div., U. S. Steel Corp.; **W. O. Mitchell**, named manager, operations, U. S. Steel Homes Div.

**T. P. Roth**, appointed training coordinator, Rem-Cru Titanium Inc., Midland, Pa.

**D. F. Rahill, Jr.**, appointed to Pittsburgh district sales office, Jessop Steel Co., Washington, Pa.



**A. E. Somerville**, appointed manager, construction operations, Arthur G. McKee & Co.

**J. P. Kelly**, appointed general sales manager, Industrial Div., Gould - National Batteries, Inc., Trenton, N. J.

**W. K. Dorman**, appointed manager, slag products, U. S. Steel Corp.

**P. P. Napp**, appointed market research analyst, Exide Industrial Div., The Electric Storage Battery Co., Philadelphia.

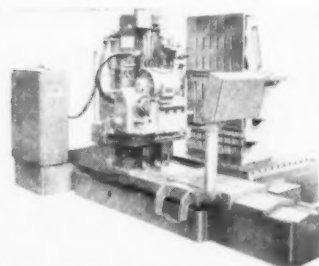
**C. W. Ostrander**, appointed technical director, Allied Research Products, Inc., Baltimore, Md.



**J. W. Coombs** will become vice president, administration, General Metals Corp.

**G. R. Masquelier**, named manager, product planning, Electric Range Dept., Westinghouse Electric Corp., Mansfield, O.; **C. R. Evans**,

(Advertisement)



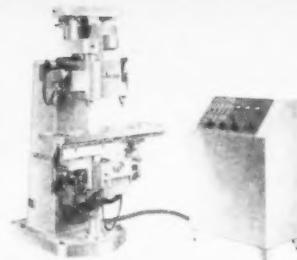
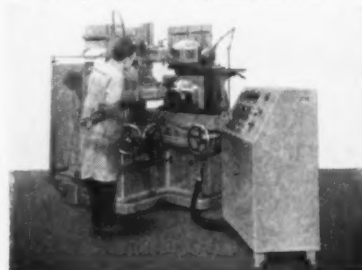
### A P&W Tracer-Controlled MILLER FOR EVERY JOB

#### KELLER Type BG-21

... A powerful, versatile machine made in a range of sizes from 5' x 21½' to 10' x 4' in single spindle or 2-spindle models.

#### KELLER Type BL

... A compact powerful Tracer-Controlled Miller for work within the range of 36" x 20", with all the new KELLER features. Single spindle and 3-spindle models.

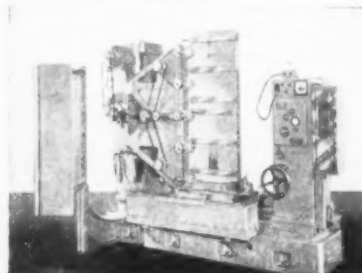


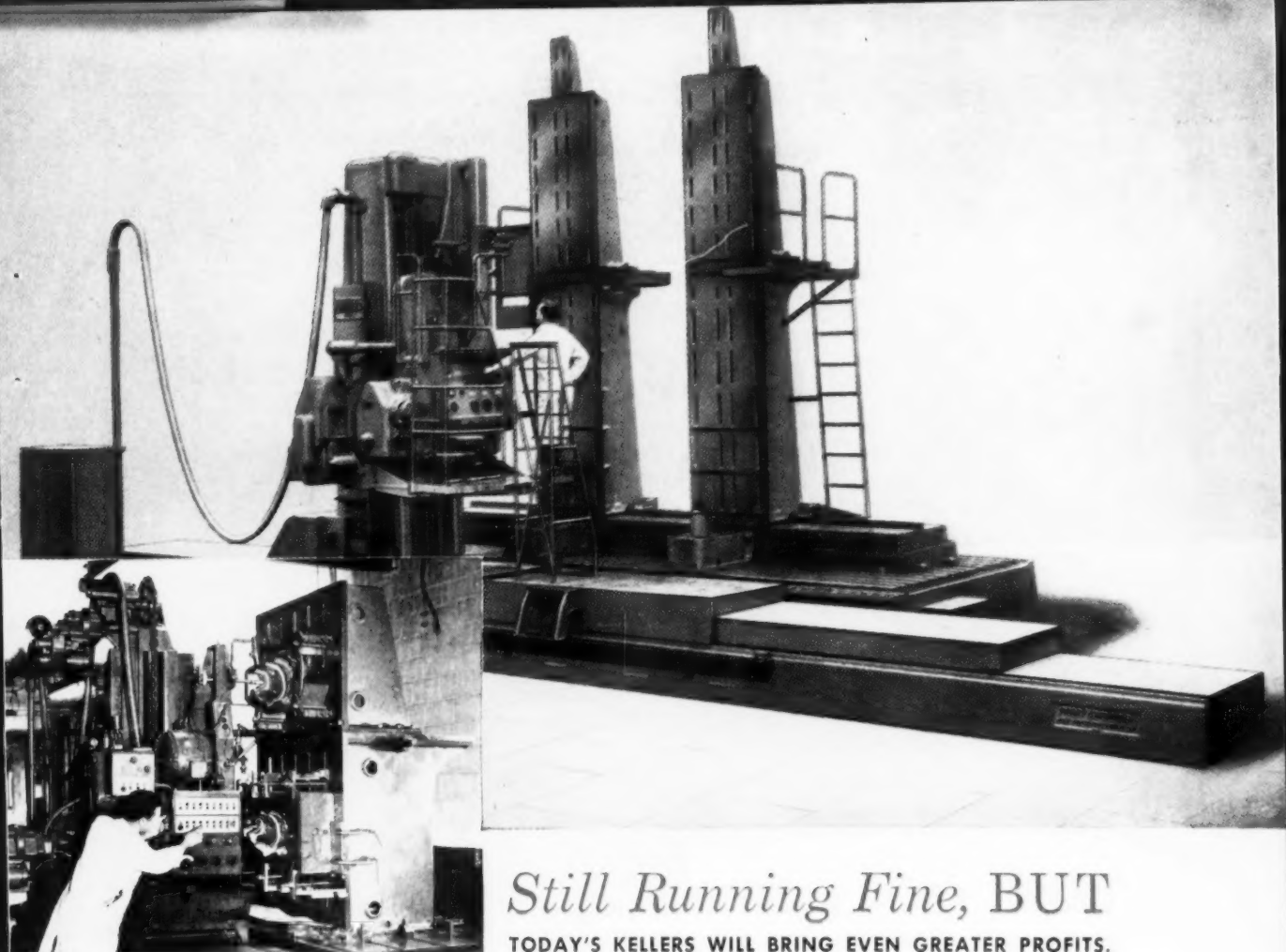
### VELVETRACE® Kellering Machine

... Duplicates the finest detail with extreme precision. New, non-contacting tracer accurately follows any 3-dimensional model without touching it. Cannot damage the softest, most fragile models.

#### Automatic Duplicating Machine

... Specially designed for low cost production of forging dies and molds for glass and plastic. Automatically re-produces original dies and molds with precision and remarkable detail. There are two versions of this machine, one for machining bottle molds, one for forging dies. Supplied with 1, 2 or 4 cutter spindles.





## Still Running Fine, BUT

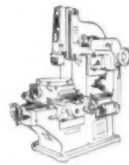
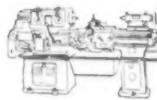
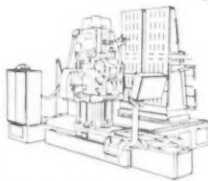
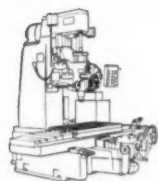
TODAY'S KELLERS WILL BRING EVEN GREATER PROFITS.

You may put off replacing an older machine because "it's still paying its way." But is it? A machine tool purchased years ago may be the cause of lost efficiency, higher labor and per-unit costs, the inability to produce high quality *economically*. Failure to compete profitably with more modern machines may be putting you far behind your competitors. For example, just 10 short years ago our Keller BG-2 Tracer-Controlled Miller was the ultimate in productive efficiency, but let's check the added features possessed by its successor, the new P&W BG-22 Keller . . .

1. Operates from any conventional polyphase current, with no motor generator set required.
2. Increased travel speed of cutting tool . . . to an infinitely variable range from 0.5 to 30.0 inches per minute.
3. Three dimensional tracer permits motion in 2 directions at the same time, yet allows interlocking action for accuracy. One slide is kept always in motion, while the second moves as required to follow the shape and maintain accurate interlocking action.
4. More nearly perfect surface cutting speed over irregular contours assured through superimposed auto-speed control of all motions.
5. Increased capacities . . . up to 20 feet horizontal x 7 feet vertical.
6. Centralized operator controls supplemented by remote control stations.
7. Rapid traverse in all three motions.
8. Automatic lubrication.
9. Score-proof phenolic bearing surfaces on all slides and lead screw nuts.

Write for complete information.

Pratt & Whitney Company, Incorporated  
10 Charter Oak Boulevard, West Hartford, Conn.



JIG BORERS . . . ROTARY TABLES . . . KELLER MACHINES . . . LATHES . . . VERTICAL SHAPERS . . . CUTTER AND RADIUS GRINDERS



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FIRST CHOICE FOR ACCURACY  
MACHINE TOOLS • GAGES • CUTTING TOOLS



**beautiful blacks**

for superior product appeal . . .

## **EBONOL OXIDE FINISHES**

For STEEL, COPPER,  
BRASS and ZINC

- maximum wear resistance
- high adhesion
- jet blackness

With extensive laboratory facilities, a staff of trained technicians in the plant and in the field, and years of practical experience, Enthone Incorporated is exceptionally well equipped and qualified to study your metal blackening requirements (or any other difficult metal finishing problems) and recommend a practical solution. Write now, outlining your needs.

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**442 ELM STREET, NEW HAVEN 11, CONNECTICUT**  
*Metal Finishing Processes • Electroplating Chemicals*

Service Representatives and Stock Points in Principal Cities of  
U.S.A. and Canada, Brazil, England, France, Sweden, and Germany



named manager, sales training, Laundry Equipment Dept.



**J. H. Greening**, promoted to chief engineer, Micromatic Hone Corp., Detroit.

**Blake Thomas**, appointed general manager, Betz Div., Danville, Ill., Bohn Aluminum & Brass Corp.

**Ralph Dinsmore**, appointed manager, and **Evon Wells**, to asst. manager, Philadelphia sales office, International Resistance Co.

**L. B. Moon**, appointed development manager, Kennecott Copper Corp., New York.

**E. O. Morgan**, appointed general sales manager, Cee-Bee Chemical Co., Downey, Calif.



**D. G. Kelton**, named asst. general sales manager, The Cleveland Cap Screw Co., Cleveland.

**A. R. Tefft** becomes resident service engineer, midwest, Enthone, Inc., New Haven, Conn; **Robert**

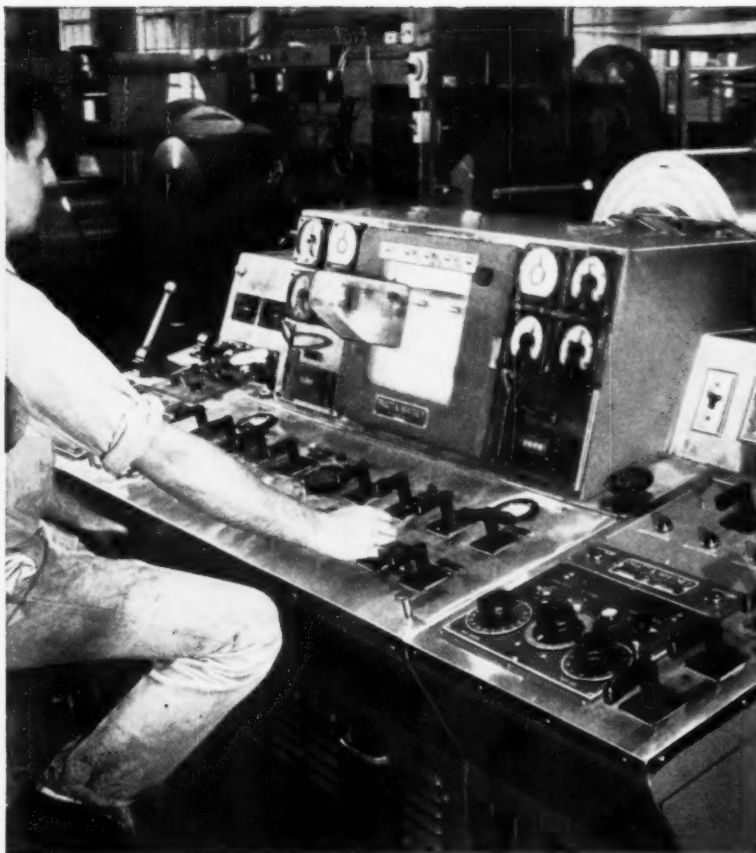


PHOTO COURTESY OF THE WALLINGFORD STEEL CO., WALLINGFORD, CONN.

## CONTROLLED ACCURACY to $\pm .0001$ inch\* at 800 ft. per minute

... WITH PRATT & WHITNEY AUTOMATION GAGING

Here's an automation gaging installation which provides fully automatic correction of a mill that rolls at speeds of more than 800 feet per minute and produces steel strip as thin as 0.002". Results that rate a mention — and your consideration — include ... greater accuracy ... finer product quality ... lower production costs ... and the near-elimination of scrap losses.

Whether your interest is continuous or parts production, Pratt & Whitney Automation Gaging can play an important role in improving your product quality and reducing your unit costs by increasing your units per production hour.

\*Equal to 1/30th the thickness of a human hair.

Write for additional information

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GAGE BLOCKS ... STANDARD MEASURING MACHINES ... SUPERMICROMETERS ... COMPARATORS  
CONVENTIONAL GAGES ... THREAD COMPARATORS ... AUTOMATION AND CONTINUOUS GAGES



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FIRST CHOICE FOR ACCURACY

MACHINE TOOLS • GAGES • CUTTING TOOLS

# HOW THREE PHASE RESISTANCE WELDING IS USED TO FABRICATE STRUCTURAL STEEL

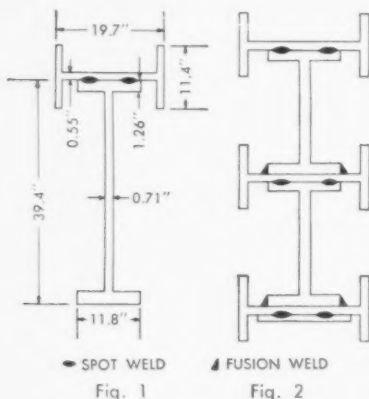
*Production proves Sciaky techniques of resistance welding provide the consistently safe welds necessary for assembling primary structures.*

For over 20 years resistance welding has been used to fabricate metal structures by many European contractors. However, until recently the process has been restricted to relatively light sections.

## Structural Steel Fabrication

In Rouen, France, Entreprises Metallurgiques & Coloniales is now successfully resistance welding heavy structural beams into composite strength members.

Figure 1 shows a typical cross section of two "I" beams spot welded together. Figure 2 shows a more elaborate development of the assembly shown in Figure 1. Five "I" beams are welded into one composite strength member.



A typical beam is almost 69 feet long. It is part of an assembly 131 feet long weighing 45 tons. A total of 182 spot welds in two rows is used to fabricate the structure.

## Sequence of Operations

To facilitate production, beam elements to be welded are mounted on an arrangement of two carriages located in front of the welder. One of the carriages is powered and operated by remote control by the single operator (not skilled) who also triggers the weld sequence. Indexing time is 4 seconds.

The welding of the assembly is

accomplished in four operations. Operation No. 1 begins in the middle of the column. One row is made to the end and the welder returns to the middle to weld the balance of the row in the other direction. The second row is accomplished in the same manner.

The average time required for each spot weld including indexing is less than 40 seconds. *The entire beam is fabricated in less than two hours including set-up time.*

## The Welder

The welder is a Sciaky Patented Three Phase 450 KVA Welder designed to be operated from a cradle or in a suspended position (as shown in the photograph). Power supply is 220 volts. Maximum electrode force is 14 tons. Maximum secondary current is 75,000 amps. Controls are located directly opposite the welder.

The key to successful welding of heavy structural shapes is the Sciaky Patented Three Phase Princi-

ple. In addition to its many other advantages it provides the weld quality and consistency essential to primary structure fabrication.

## Advantages of Resistance Welding

The use of Sciaky Resistance Welding Techniques results in a substantial saving in material and weight.

It eliminates extra beam size necessary to compensate for the weakening effect of rivet holes. The extra operation and time necessary to drill rivet holes is eliminated. In addition the material and weight contained in rivet heads is eliminated.

Only one worker (not skilled) is needed for the welding operation.

## Further Information

More detailed information on this operation is presented in a twelve page illustrated report. Write for your copy, asking for the "Resistance Welding at Work Special Report on Fabricating Structural Steel." There is no obligation.

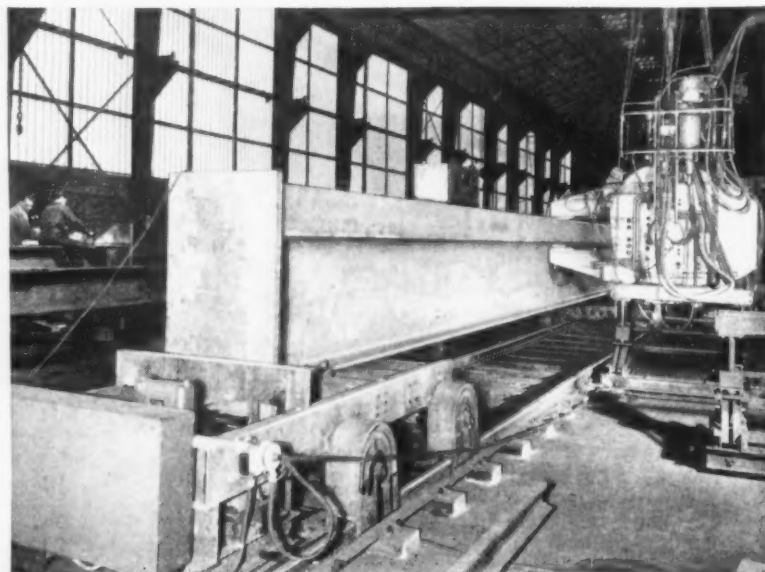


Fig. 3 View of beam riding on powered dolly as welds are being made by the Sciaky Patented Three Phase Welder.

*Largest Manufacturers  
of Resistance Welding Machines in the World*

**SCI AKY.**

Sciaky Bros., Inc., 4923 West 67th Street, Chicago 38, Ill., Portsmouth 7-5600

Goodsell becomes senior resident engineer, midwest; A. H. Sanders, appointed district manager, midwest.



**S. H. Stoner**, named general manager, New Departure Div., General Motors Corp.

**J. R. Hancock**, appointed field sales representative, several Southern states, The Allen Mfg. Co., Hartford, Conn.



**R. H. Valentine**, appointed chief engineer, New Departure Div., General Motors Corp.

#### OBITUARIES

**R. W. Straus**, 65, retired chairman of the board, American Smelting & Refining Co.

**W. R. Anyan**, 60, secretary, The New Jersey Zinc Co.

**E. J. Bothwell**, 56, charge of the distributor sales section, Nickel Sales Dept., The International Nickel Co., Inc.

*"We replaced  
THIS...*

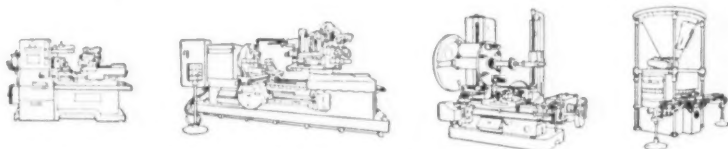
*with  
THIS...*

**4 \* HAND  
TURRET LATHES**

**2 P&J AUTOMATICS  
AND  
1 OPERATOR**

*... and INCREASED PRODUCTION 45%!"*

As part of a complete plant modernization program, the American Bosch Arma Corporation recently replaced 4 hand turret lathes (\*2 machines on a 2-shift basis) with 2 Potter & Johnson 3-U Automatics to produce hard Nitralloy parts requiring 25 turning, facing, boring and forming cuts. Output is increased 45%, and one operator on one shift handles both P&J Automatics . . . releasing 3 machinists for other work. In addition, smoothness and accuracy are improved, with rejects reduced to an absolute minimum. If you are using hand lathes, you may be missing opportunities for cost savings and production gains. Write now for "34 Practical Production Ideas," information that shows how your jobs can be done the finer, faster P&J *AUTOMATIC* way! Potter & Johnson Company, Pawtucket, Rhode Island.



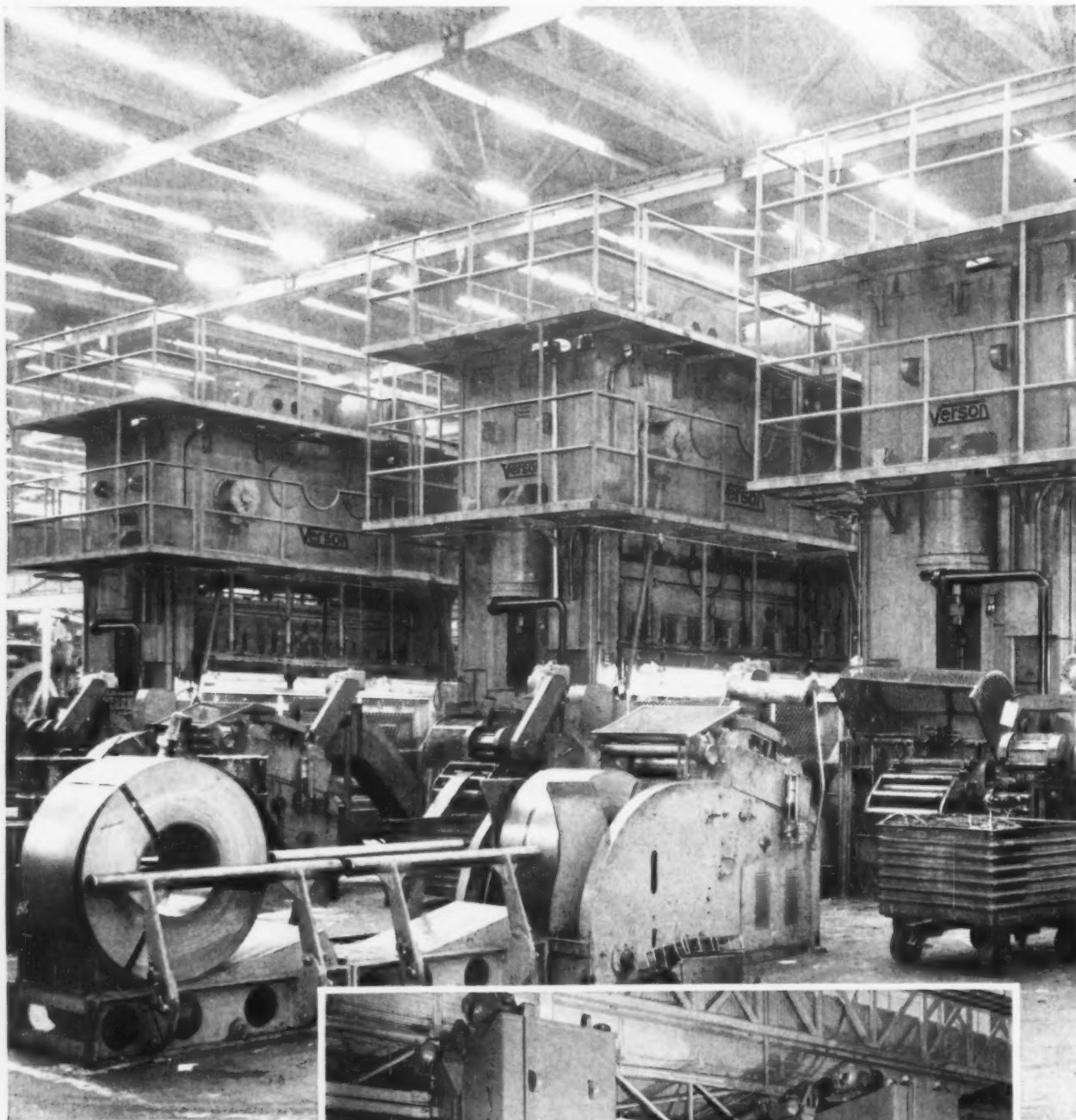
AUTOMATIC TURRET LATHES . . . GEAR CUTTERS . . . GILDA PACKAGING MACHINES



**POTTER & JOHNSTON**

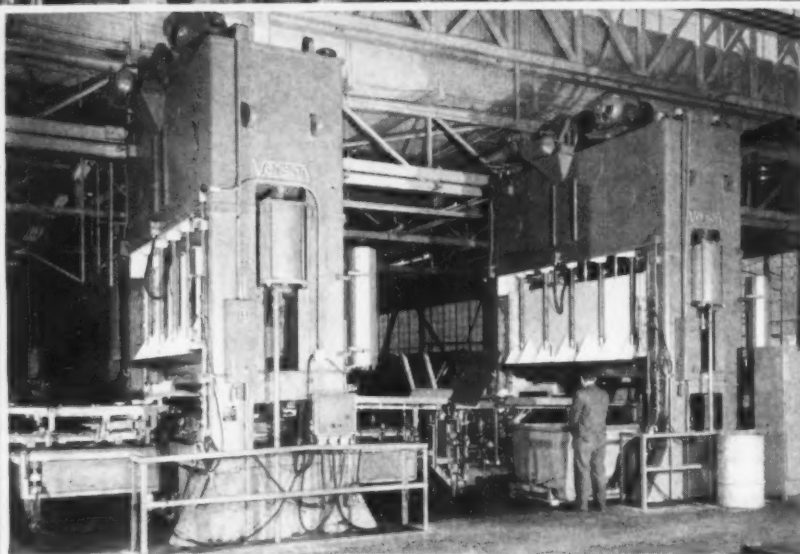
SUBSIDIARY OF PRATT & WHITNEY COMPANY, INC.

PRECISION PRODUCTION TOOLING SINCE 1898



An automated Verson press line which incorporates two standard Verson 400 ton Eccentric Presses. Changing requirements could be met by modifying handling equipment or the presses could be used individually.

159







A good example of Transmat versatility. Each of these three identical 800 ton, 8 station Verson Transmats is capable of making any of four different automotive parts at the rate of 1000 per hour.

## You can combine versatility with automatic high speed production ... with Verson Transmat Presses or an automated Verson press line

Verson Transmat Presses or Verson Automated Press Lines are designed first and foremost for the purpose of producing a specific multi-operation stamping in large quantities at the lowest possible cost. Any other consideration is secondary to the achievement of this objective.

However, Verson engineering has made it possible to offer surprisingly broad versatility in machines that would normally be considered single purpose. The Transmat, for example, has individually adjustable wedge slides which may be arranged for ram cushions. Adjustable stroke individual knock out cylinders are provided at each station. A variety of bed cushion arrangements is available. Provision can be made for stack or coil feed. Non-oscillating feed bars are adaptable to changing requirements. By taking advantage of these features, users have been able to make more than one part on the same Transmat.

The automated press line, since it often incorporates standard presses, is even more versatile. Handling equipment can often be modified to accommodate radical changeover.

If uncertainty about the adaptability of high production tool ups to changing requirements has kept you from taking advantage of the cost reductions they make possible, it is time to talk to Verson application engineers. They will welcome the opportunity to show you what has been done and what can be done. And remember, the Verson concept is to give you versatility without sacrificing the cost cutting advantages of high output.

A Verson Press for every job  
from 60 tons up.

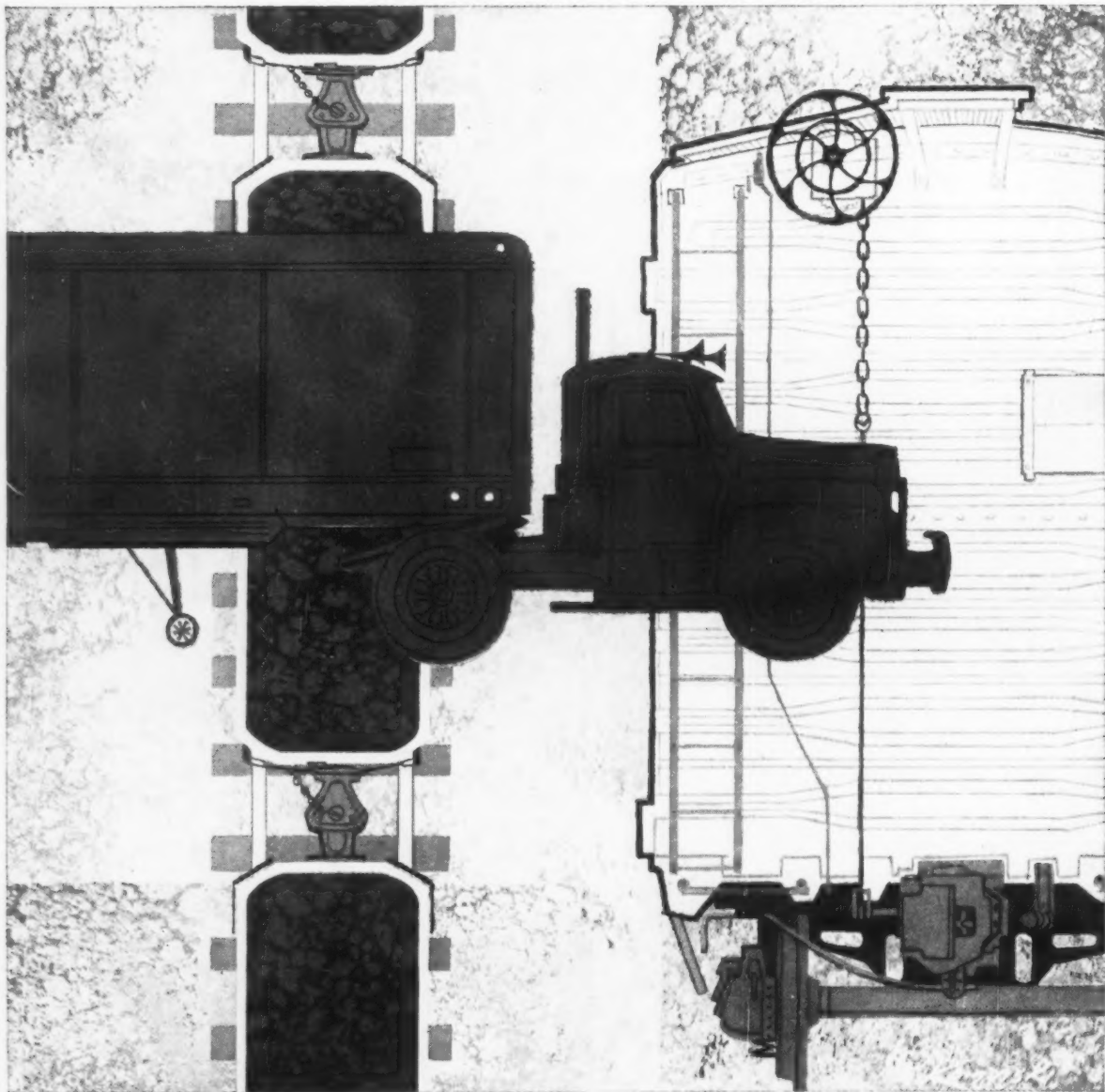


ORIGINATORS AND PIONEERS OF ALLSTEEL STAMPING PRESS CONSTRUCTION

**VERSON ALLSTEEL PRESS CO.**

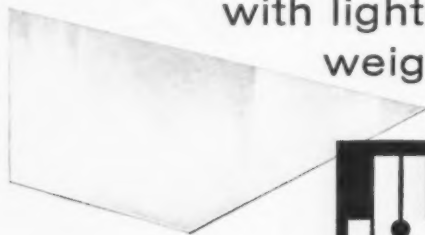
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## **JALTEN** low alloy, high-strength J&L steel

provides  
equal strength  
with lighter  
weight



**Jalten** permits high design loads with reduction in section. Usual reduction is two gages with weight saving as much as 25%.

High strength of Jalten is the result of balanced chemical composition, carefully controlled during production. Strength is retained through fabrication and welding without further heat treatment.

Jalten is available in the forms you require (plates, hot rolled sheets, hot rolled bars, small shapes and structurals). Jalten can be purchased in three grades to meet specific requirements for high strength, formability, impact, resistance to abrasion and corrosion.

Your local distributor can supply you with information on Jalten, or you can write direct to the Jones & Laughlin Steel Corporation, Dept. 403, 3 Gateway Center, Pittsburgh 30, Pennsylvania.

**Jones & Laughlin**  
... a great name in steel

# Boron Rids Steels Of Stretcher Strains

By P. M. Unterweiser—Metallurgical Editor

**If you use steel sheet for deep drawing, this article will come as welcome news.**

**Non-aging steels—steels that won't develop stretcher strains—are a definite reality. They're likely to be in mass production within a few years.**

■ It won't be this year or next. But within a relatively few years, you will be able to buy commercial low-carbon steel sheet that is free of all strain aging.

With these new steels, deep drawing operations will no longer be plagued with the problem of stretcher strains.

Best of all from the user's standpoint, these non-aging steels need not be priced out of reach of most users. Actually, it is expected that they will promote overall savings. The reason: Low-cost boron additions will be used to eliminate strain aging in alloys of commercial composition.

**Prospects Bright**—These encouraging predictions are not the product of wishful thinking. They were recently made by a distinguished metallurgist who has devoted years of research to the problem of boron additions.

Are his predictions dependable? Few scientists anywhere are as familiar with the problem as is Dr. Eric Morgan, Assistant Director of Research, Jones & Laughlin Steel

Corp., Pittsburgh. Much of Dr. Morgan's work was done in collaboration with J. C. Shyne at the Scientific Laboratory, Ford Motor Co., Dearborn, Mich.

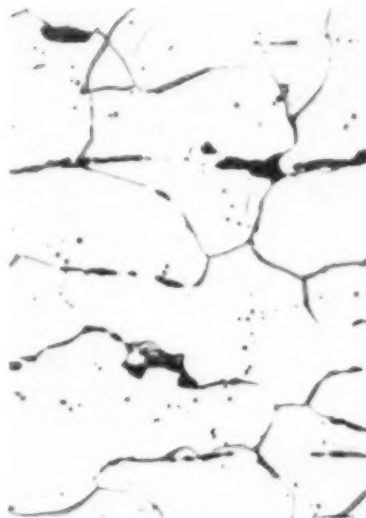
**The Long Pull** — It represents years of careful investigation of the more likely ways of eliminating strain aging. Just about two years ago, a part of the program was reported in *THE IRON AGE* (issue of June 23, 1955, p. 91).

Not that the elimination of strain aging is a well-hidden metallurgical secret. It isn't. Ways in which it can be done have been known for many years. But "the practical problem," according to Dr. Morgan, arises "because all known methods of preventing strain aging result in a more costly steel."

Dr. Morgan contends that nitrogen is the important cause of strain aging in commercial steels. Particularly, that nitrogen which "is not sufficiently precipitated by commercial heat treatments to eliminate subsequent strain aging."

**Trouble With Nitrogen** — And how can this errant nitrogen be "sufficiently precipitated"? The addition of strong nitride-forming elements to the melt is the obvious answer. Both aluminum and titanium are satisfactory in this respect. But to be effective, both require that the steel be fully killed.

At this point, costs overshadow the picture. Killed steels produce a lower ingot-to-slab yield than



**Hot-Rolled Boron Strip:** At 1000x, this is the microstructure of a non-aging, boron-treated steel. Iron boride chains often appear within the ferrite grains. (L. R. Shoenberger)

rimmed steels. So that, aside from any other metallurgical considerations, killed steels are bound to be more costly.

**Vanadium's Costly**—To take full advantage of the higher yield of rimmed steels, the addition of vanadium has been suggested to eliminate nitrogen strain aging. There is abundant evidence that vanadium can do the job. But, unfortunately, vanadium is a relatively rare metal and it is fairly expensive.

This doesn't mean that vanadium

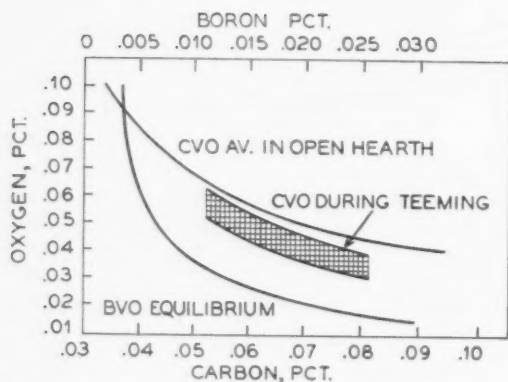


Fig. 1: Boron-oxygen and carbon-oxygen relationships in molten steel, according to G. Derge.

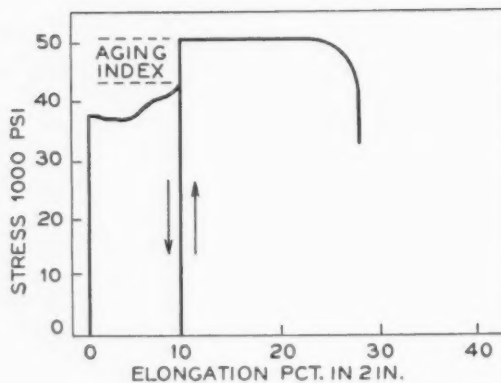


Fig. 2: Tensile test curve for strain-aged steel, containing no boron and aged 14 days at 76°F.

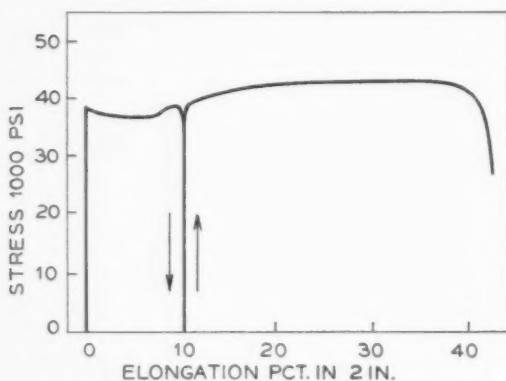


Fig. 3: Tensile test curve for strain-aged steel, containing 0.008 pct B and aged 14 days at 76°F.

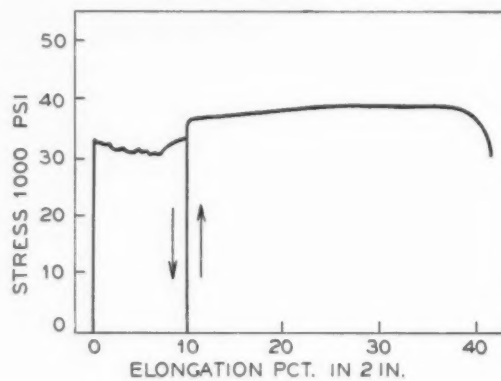


Fig. 4: Tensile test curve for strain-aged steel, containing 0.002 pct B and aged 14 days at 76°F.

additions have been crossed off the list of active possibilities. They still figure importantly in strain aging research. But the cost factor cannot be overlooked.

**Back To Boron**—Sifting through all of the possible approaches serves to spotlight the contribution of Morgan and Shyne. Essentially, they have shown that boron, although a mild deoxidizer, can be effective "in eliminating nitrogen strain aging from commercial open hearth steels without producing a killed steel."

And boron, of course, is fairly inexpensive and easy to come by.

In addition to its higher yield and lower cost, Morgan and Shyne saw another important advantage in the production of a rimmed steel. When a rimmed steel solidifies, it ends up

with a relatively pure iron rim or shell. The rim is desirably ductile and provides a surface that is ideal for finishing in sheet form.

**Wise Compromise**—Still, there was the matter of making the boron additions. The rimmed steel, without benefit of deoxidation, would obviously oxidize the boron. So a compromise was arrived at in the form of a semi-killed steel.

Such a steel is produced as a chemically capped ingot. After pouring, it is first allowed to rim in the usual manner. Then a deoxidizer such as aluminum is added.

The end product combines a rimmed surface with a partially deoxidized core. Partial deoxidation minimizes the oxidation of the boron addition. Thus it makes the

addition considerably more efficient.

An alternate method has been proposed by L. R. Shoenberger of J&L, who has produced semikilled non-aging steels by combining boron and aluminum additions.

**Big Questions**—What is the optimum boron content for a non-aging steel? According to Morgan and Shyne, the answer is about 0.007 pct. This is high enough to guarantee the non-aging effect. Unfortunately, it is too high for satisfactory rimming.

For this reason, a maximum boron content of 0.004 pct is recommended during teeming. Extra boron (0.003 pct) is made as a capping addition. To be properly distributed, it must be added to turbulent metal.



Theoretically, at least, the boron might be added either prior to, or with, the normal aluminum capping addition. Actual practice served to eliminate one alternative. Boron capping prior to aluminum capping was definitely the best bet.

**Not Guilty**—In one instance, a boron-containing heat produced a lower ingot-to-slab yield in seven ingots. This was definitely not the fault of the boron. Rather it was caused by overheating during the soaking period. Test results proved that the chance of making a soft-centered ingot is no greater with boron than in similarly heated steels without boron.

The test program uncovered another interesting fact: Non-aging, boron-treated steels are generally more ductile. "The total elongation (in 2 in.) of the untreated steels was 40 pct in the unaged (annealed) condition. Those boron-treated steels which were non-aging exhibited a total elongation of 42 pct even after strain aging at room temperature for 14 days." Some of the typical stress-strain curves for boron-treated and boron-free steels are shown in Figs. 2, 3 and 4.

**No Fixed Answer**—From the practical standpoint, how much aging can be safely tolerated? This, the researchers admit, is likely to vary from application to application. There can be no fixed answer. But "it is safe to assume that a steel which does not demonstrate an aging index (i.e. an increase in flow stress) of more than 2000 psi will not exhibit stretcher strains in any pressing operation."

Dr. Morgan admits that the full-scale production of non-aging steels is not commercially feasible at the present time. For one thing, it is not yet possible to make consistently good boron heats in line with current openhearth practice.

**The Oxygen Problem**—This is certainly no measure of the feasibility of boron additions. Nor is it necessarily a criticism of openhearth practice. The overall problem is complex, although its solution de-



**THINGS TO COME:** The day may not be far off when commercial tonnage of non-aging low carbon steels will become a reality.

pends on a relatively few factors.

In openhearth heats with low oxygen content, boron proves to be highly effective. In those heats with a higher oxygen content, boron won't work at all.

Dr. Morgan pinpointed this boron-oxygen relationship in his formal report. "The important boron content," he wrote, "is not necessarily the total boron present but rather that boron which is effectively free to combine with the dissolved nitrogen. Any boron present as boron oxide will not contribute to the formation of the boron-nitrogen complex. . . ."

**Need Careful Controls**—"In order to obtain successful boron-treated, non-aging ingots, it is essential that the oxygen content of the steel be controlled within certain limits. This is probably best achieved by using only those heats which will be tapped at not less than 0.06 pct carbon. At that carbon level, the carbon-oxygen product will usually fall within the satisfactory limits of 0.0026 to 0.0030 at teeming. A standard preparation technique can then be applied with reasonable assurance that normal ingots will be produced."

Because the role of oxygen is so very critical, oxygen must be measured at the furnace before tapping. Standard vacuum fusion techniques

for measuring oxygen content take about 55 minutes for a single test.

**Rapid Testing**—This is much too long a time for practical purposes. Until now, the oxygen measurement problem has been a major roadblock. It has been among the prime reasons for delaying the full-scale output of boron-treated, non-aging steels.

Fortunately, this obstacle may soon be overcome—thanks to discovery of a rapid oxygen-determination technique. Developed by research chemists at Jones & Laughlin, the new method can check oxygen content in about seven minutes. All equipment required is simple and inexpensive.

**Getting Closer**—One by one, the practical problems are being solved. And with each new solution, the dream of non-aging steels is moving closer and closer to mass-production reality.

It won't be in the works this year or next. But when it comes along in the next few years, a lot of people will agree it was well worth waiting for.

Reprints of this article are available as long as the supply lasts. You may obtain a copy from Reader Service Dept., THE IRON AGE, Chestnut & 56th Sts., Philadelphia 39, Pa.

# Special Fixtures Speed Welding of Bulky Assemblies

**Automatic welders are fast. But how can you take advantage of the speed on heavy and diversified units?**

**It takes special equipment not only to handle the unwieldy parts, but to adapt to differing sizes of product.**

■ Uniform, sound welds made on fast automatic equipment are a key to today's high production rates at the International Harvester Tractor Works, Chicago. Hand arc welding has not disappeared, but the automatic welders make possible greater production per man-hour and reduced manual handling. Weld quality has improved and production costs have lowered.

International Harvester turns out five sizes of crawler tractors, and many different combinations of grader and dozer blade accessories for these basic tractors. Yet the welders adjust readily to the different production sizes.

**High Welding Speeds**—The automatic welding machines, built by Pandjiris Weldment Co., St. Louis, with the collaboration of Harvester welding engineers, are achieving high welding speeds, some at over 30 ipm in heavy sections. An example is in the welding of track frame box sections. Four submerged arc welds are made simultaneously, each at a rate of 32 ipm.

The box section assemblies comprise two rolled sections for the top and bottom and two side plates. Except for machine beveling of the side plates, no other operations are performed prior to welding.

The four stock members are fed from a conveyor table into the fixture of the Pandjiris machine. Fast acting hydraulic rams clamp and hold them on all sides in the precise position, without prior tacking.

**Heads Team**—Four Lincoln automatic welding heads move into position with the holding rams. The heads traverse and weld all the joints in one pass.

Four 900 amp Lincoln generators supply current to the welding heads. When the welds are completed, the heads and rams retract. An air cylinder ejects the completed box on the conveyor table and the cycle repeats.

Adjustments are provided so that the same machine can accommodate lengths from 93 to 144 in. and all required box sizes.

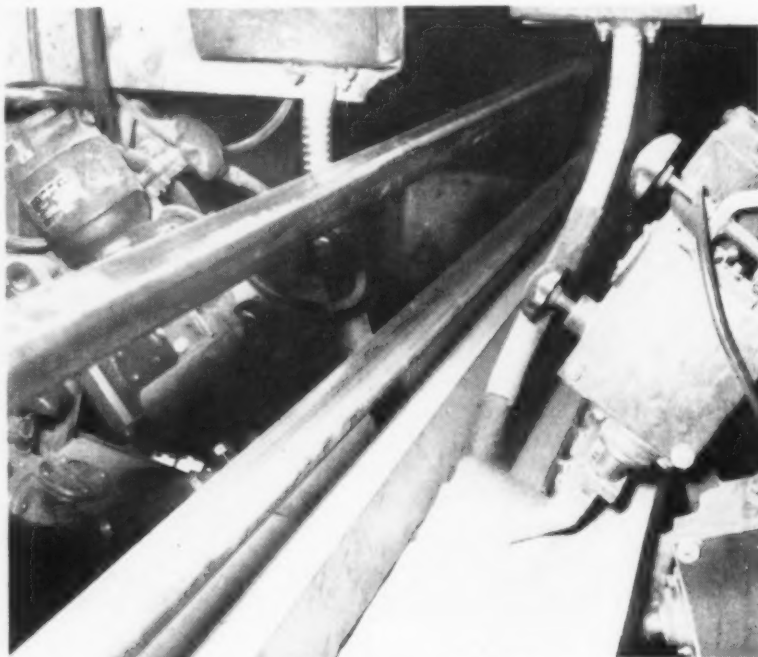
The unused Lincoln 840 flux drops into a trough below the full length of welding traverse. A screw conveyor moves the flux back to a sump. Suction lifts it to overhead separators for segregation prior to feeding back to dispensing hoppers.

**No Distortion**—Applying the high heat of welding on all four corners at the same time eliminates the expected welding distortion. No straightening of the beams is necessary.

Harvester produces many variations and sizes of blade assemblies. Basically, they consist of a curved plate stiffened by two "back beams" of formed steel. A plate reinforces the blade cutting edge.

With the Pandjiris Tacking Press, the beams are located, aligned and tacked onto the blade, a condition ideal for the subsequent high speed submerged arc welding.

This press provides horizontal acting, air hydraulic rams that hold the curved blade pieces to the proper chord. Both back beams are then laid on top of the blade. The three floating overhead rams with jigs are applied vertically.



**SIMULTANEOUS WELDING:** Four heads weld all joints of box section in one pass. Fixture holds plates without tacking.

**Positive Dimensions**—The combination of this fast acting clamping and the ability to correct minor metal-working variations to positive dimensions lets manual welding operators to secure all three components with quick tack weldings.

The tacked assemblies proceed to the blade automatic welding machines. They are clamped onto a table between a head and tail-stock type of positioner. By rotating, all joints can be welded in a downward position.

One Lincoln LAF-3 welding head is mounted on a cantilevered travel beam. Welding speeds vary as to the particular joint requirement, but do reach as high as 38 ipm.

The same welding machine is used to weld the edge reinforcing plate. The one fixture makes six welds in all at maximum speed on each assembly.

**Follows Contour**—The production of push arms for all basic tractor models is another example of box section fabrication using two rolled sections for the vertical side members. The four resultant joints between members are a changing contour path.

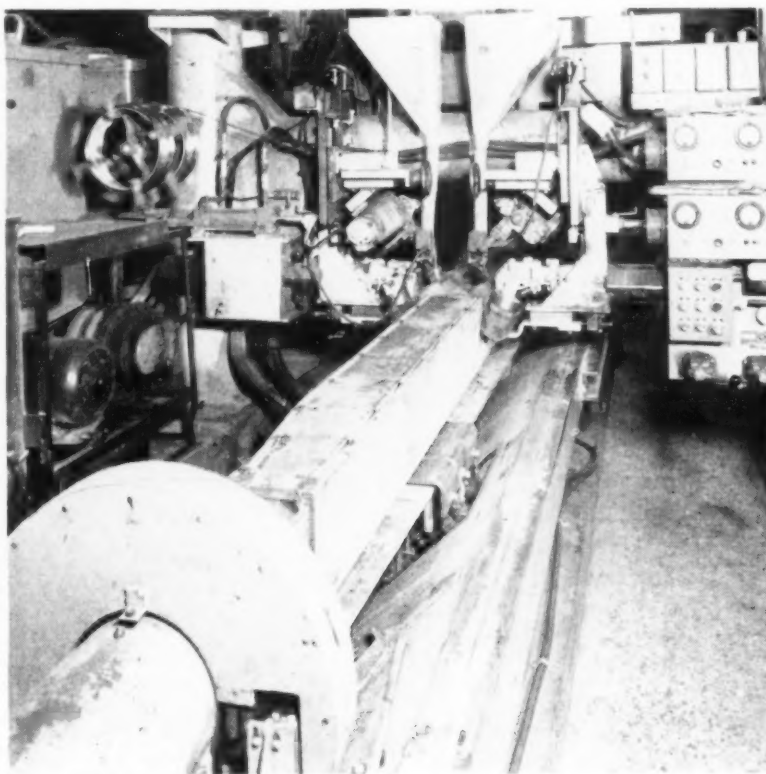
The single Pandjiris fixture produces all sizes of push arms with a minimum setup time. Here the previously tacked assembly is loaded between air operated plugs that insert into both ends.

Two Linde Unionmelt heads, each employing twin wires, mounted on a floating carriage, allow transverse adjustment by means of guide rollers that bear against the sides of the work piece. Two welds are made at one time at about 20 ipm. As the push arm section changes, the Unionmelt heads "float" in or out to accommodate the contoured path.

Two continuous belts hold the heavy flux deposit without disturbing the molten weld during cooling. After completing two welds in one pass, the carriage rapidly retransverses. The remaining two joints can be welded similarly.



**ROTATING FIXTURE:** Blade assembly rotates so that all welds can be made in downward position.



**FLOATING HEADS:** The welding carriage adjusts in or out to the contour by guiding on rollers.

# Better Maintenance Demands A System

By E. R. Happel—Maintenance Engineer, Machinery Div., Crown Cork & Seal Co., Baltimore

**One measure of maintenance efficiency is plant production. Does it keep moving, or is it plagued by costly delays?**

**Another measure: Doing a thorough maintenance job with relatively few craftsmen.**

**A top rating on both counts indicates a good system. Here's how one works.**

■ The maintenance department in a busy metalworking plant has two big jobs. One is to prevent trouble in production and service equipment. The other is to remedy trouble quickly and efficiently when and if it does occur.

Doing these jobs with a minimum of manpower and waste motion calls for a definite system. Otherwise, maintenance can easily slump into a catch-as-catch-can operation.

At Crown Cork & Seal Co.'s Machinery Div. in Baltimore, several basic factors blend into a maintenance system that improves steadily each year.

**Know The Job**—First, the maintenance department clearly understands its prime responsibility: to keep almost 700 items of necessary equipment in peak condition. This calls for a staff with a wide range of knowledge, experience and skill.

Another essential is departmental

authority to carry out its responsibilities. Although this complete authority is recognized by all production departments, there are times when it must be tempered with common sense.

After all, there is no point in pulling a machine out of a production run for a checkup, even though the record shows that one is due. If it's performing well, it's far better to let it go until a breathing space occurs.

**Need Good Tools**—Good test, maintenance and repair equipment are also essential to the system. So is a complete inventory of spare parts most often used. The department has ample space for tool and part storage, plus a large floor area for major repair jobs. It's all provided in one plant area, near but not in the way of essential production facilities.

The system also requires a number of records, both for personnel and equipment. These are limited to essential information. Moreover, they're coded and abbreviated for simplicity and to save time.

To see how the system works, it's necessary to take a closer look at the basic maintenance staff.

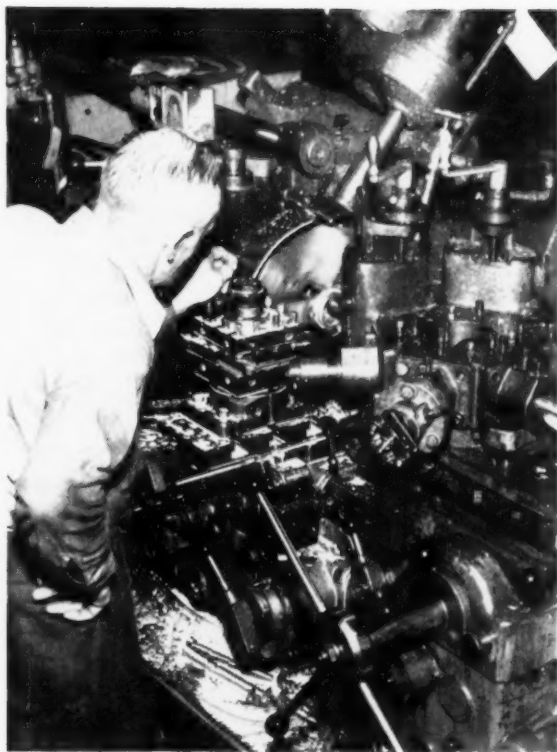
**Group Is Small**—Overall supervision, planning and policy decisions are the responsibilities of the maintenance engineer. His staff, including working supervisors, numbers only 21 skilled craftsmen.

Certain men are skilled electricians, mechanics, pipe fitters or lubrication specialists. Others, by virtue of experience and training, are listed as "multi-craftsmen." As such, they're qualified to handle jobs that require two or more special skills.



**FOR EMERGENCIES:** Telephone answering device on maintenance engineer's desk records rush requests for attention in his absence.





**ON THE JOB:** Production machines, such as this Jones & Lamson turret lathe, are carefully maintained to meet heavy work loads.



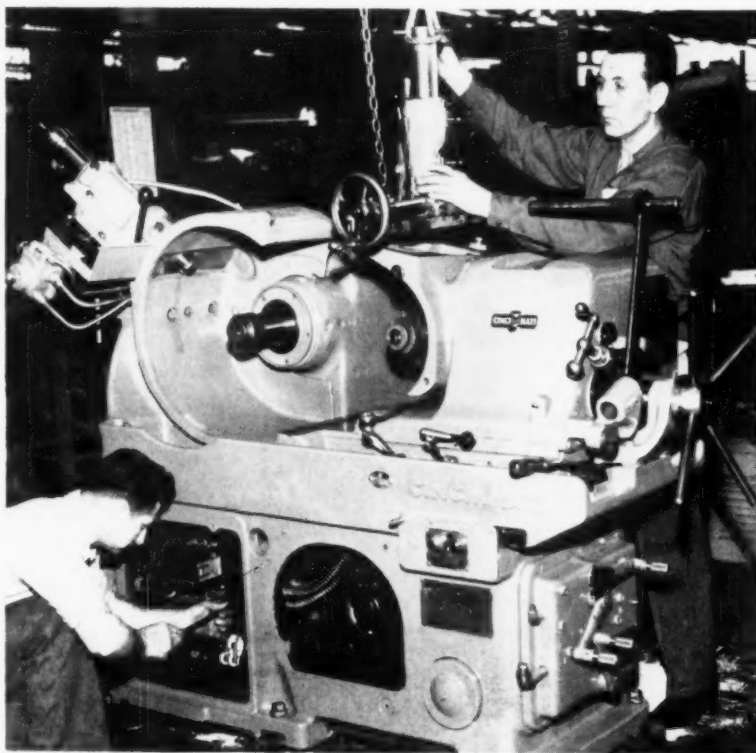
**GOOD TOOLS HELP:** Special equipment, such as this Lift-A-Loft unit, saves time and money by speeding up routine maintenance jobs.

On a given working day, some crew members will carry out a series of routine preventive maintenance assignments. Others will be dispatched to answer emergency repair calls from various production departments. Still others will be working on major equipment rebuilding jobs in the maintenance area itself.

**Records Kept Handy** — All of these activities are directed from the maintenance engineer's desk. Nearby are Kardex files where abbreviated records of work done (and its cost) are kept for every piece of plant equipment.

Another step from the desk is a "tickler" file which is scanned every day. It shows which items of equipment are due for some form of routine or special attention.

As a guide to insure a proper servicing job on any machine, the staff banks heavily on manufacturers' service manuals. Collection of helpful information begins long before equipment is delivered. By



**"SYSTEM" HERE, TOO:** Maintenance craftsmen analyzed repairs needed and rebuilt this Cincinnati centerless grinder in just 3½ weeks.



# Hot-Dip Aluminizing Widens Cast Iron Uses

**Gray and malleable iron may soon be invading the exclusive domains of their more costly high-alloy cousins.**

**An aluminum coating applied by a simple new hot-dipping process makes cast iron much more resistant to heat and corrosion.**

**As an extra bonus it enhances a casting's appearance.**

■ Corrosion resistance and appearance of cast iron can be greatly improved by applying hot-dip aluminum coatings, report J. D. Sprowl and G. E. Speicher of Kaiser Aluminum & Chemical Corp.'s Metallurgical Research Dept. in Spokane.

The coatings, which have properties similar to cast aluminum, are bright and lustrous as well as resistant to corrosion and high-temperature oxidation. This increased protection will permit use of less costly gray and malleable irons in applications currently limited to highly alloyed types.

A simple, economical way to apply such coatings has been developed. Key to the new process is careful cleaning — all traces of grease, oil, scale and oxide must be removed so the molten aluminum will readily wet the iron and form a bonded coating.

**Blast Cleaning Works Best**—Sandblasting has proved the most effective means of cleaning cast iron for hot-dip aluminizing. No further cleaning treatments are necessary. The part must be thoroughly dry before sandblasting and should be immersed in the coating bath as soon as possible after cleaning to

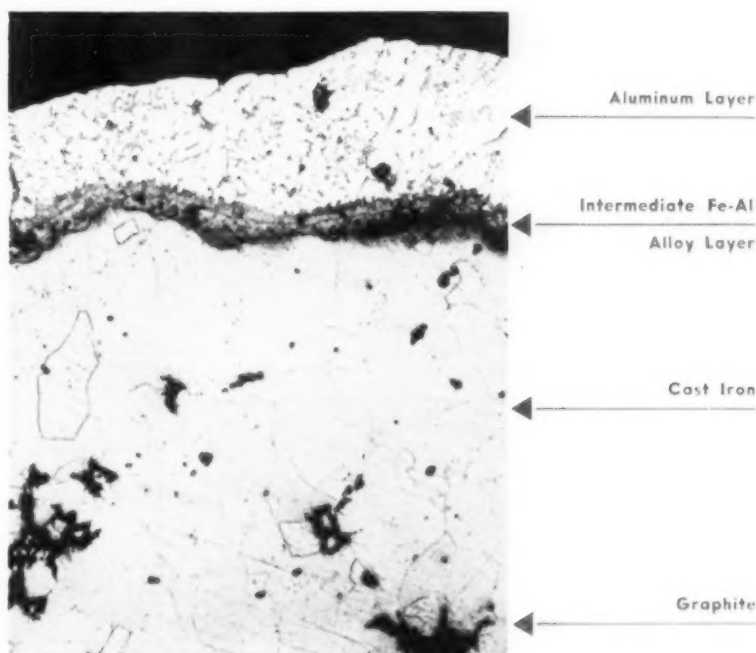
minimize reoxidation of the iron surface. Moreover, the cleaned surface shouldn't come in contact with hands or greasy objects. Care in cleaning and handling can't be overemphasized; it's vital to a sound, continuous coating.

Corrosion resistance of as-coated aluminized ferrous materials is superior to uncoated or galvanized materials in heavy industrial atmospheres, and equal to or better than galvanized materials in marine and rural atmospheres.

Microstructure of the coating in a section cut from a 90° elbow is shown in the accompanying photo. The aluminum layer is metallurgically bonded to the iron base by an intermediate iron-aluminum alloy

layer, which is formed by diffusion between the molten aluminum and iron during dipping.

Resistance to elevated temperatures is further increased by subsequent heat treatment at 1700°F. During this treatment the aluminum diffuses completely into the iron and produces a coating composed entirely of iron-aluminum alloy. This heat-resistant coating protects cast iron indefinitely from scaling in sulfurous and other environments at temperatures up to 1400°F. It will withstand temperatures up to 1700°F for shorter periods of time. Recent tests showed that aluminum-coated irons were the equal of conventional sulfurization-resistant irons at 1650°F.



**TIGHTLY JOINED:** Micro of cast iron coated with Kaiser Aluminizing Alloy K726. Diffused area effects bond. (0.5 pct HF etch, 250x)

# How To Check Quality In Ferritic

By Herman Mansfield—Project Engineer, Wright Aeronautical Div., Curtiss-Wright Corp., Wood-Ridge, N. J.

The result of a comprehensive study on how chemistry, microstructure and internal defects affect properties of nodular iron, this report supplies data for setting up acceptability standards on one of the widely used grades.

Microphotos showing the full range of structures from good to rejectable make it a handy reference.

Since its formal introduction to the foundry industry in 1949, nodular cast iron has gained widespread acceptance as an engineering material. The variety of applications to which this iron has been put is reflected in the number of standardized types of nodular iron now available.

Among these, ferritic nodular iron is more stable than the pearlitic type, since pearlite decomposes to ferrite and graphite after prolonged exposure to high temperatures. This

characteristic, coupled with the high ductility and excellent machinability of ferritic nodular iron, has made this material very popular, especially for use at relatively high temperatures (up to 1000°F). In the trade the material is referred to as the 60-45-10 grade.

Typical room temperature tensile requirements are 60,000 psi minimum ultimate tensile strength, 45,000 psi minimum yield strength and 10 pct minimum elongation.

Acceptability standards are dependent upon application. A given melt might be quite acceptable if strength is the primary consideration, but it might be rejected if ductility were of paramount importance.

**Considers Three Factors**—In an attempt to find how different factors affect the properties of ferritic nodular iron, a study was made of its chemical composition, microstructure, and X-ray soundness. The investigation was conducted on 114 bars obtained from castings representing nine melts produced over a period of a year.

Each of the castings is identified by a letter, while the test bars obtained from it are identified by numbers. Thus, bar No. A-22 is bar No. 22 from the casting poured from melt A.

Chemical compositions of the nine melts are given in Table I. Comparison of the small variations in composition with tensile properties failed to show any particular effect on tensiles. But since the castings studied were taken at random from nine melts, the smallness of variation in composition is significant; it shows that consistent results can be obtained under production conditions.

**X-ray Indicates Strength**—Quite pronounced, though, are the effects of X-ray unsoundness and micro-

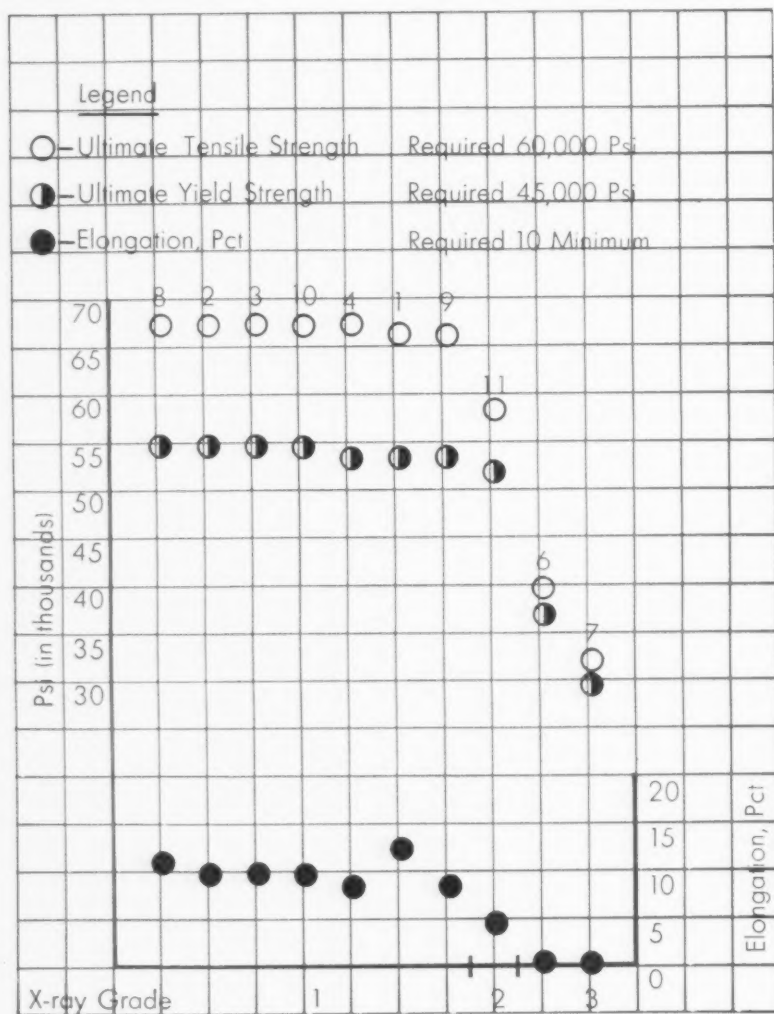


FIG. 1: Room temperature short-time tensile properties are plotted against X-ray grades of a typical heat of nodular iron.



# Nodular Iron

structure. To determine effects of the first, a comparison of tensile properties of specimens obtained from various sections of the same castings was made, in the belief they would show only slight deviations in chemistry and microstructure. This proved generally true, although some significant variations in microstructure were

occasionally found in one casting.

Each set of tensile specimens was X-rayed and each specimen identified. Then the specimens were pulled at the same setting of the tensile machine and their tensile properties (ultimate tensile strength and 0.2 pct yield strength) were compared with X-ray indications of defect. It was found that a three-step scale of X-ray grades gave a consistently reliable indication of tensile properties to be expected.

The results of tests performed on specimens obtained from one melt are reported graphically in Fig. 1.

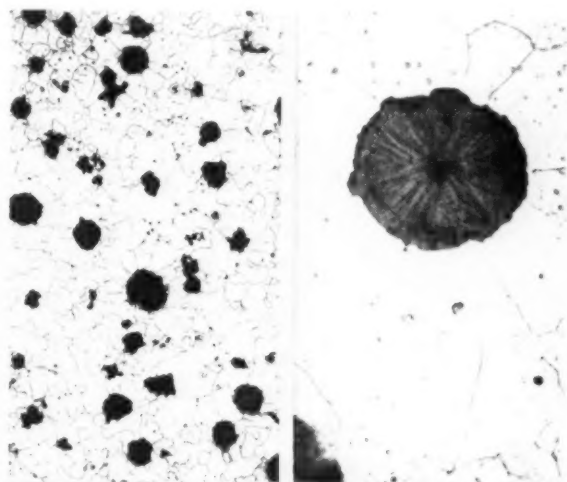
in which tensile properties are plotted against X-ray grades. Results obtained on this melt are representative of those obtained on all the other melts. X-ray grades and their interpretations are: Grade 1, no indication of defect; Grade 2, minimal indication of defect; and Grade 3, substantial indication of defect.

The extent of the X-ray differences is shown in Fig. 2.

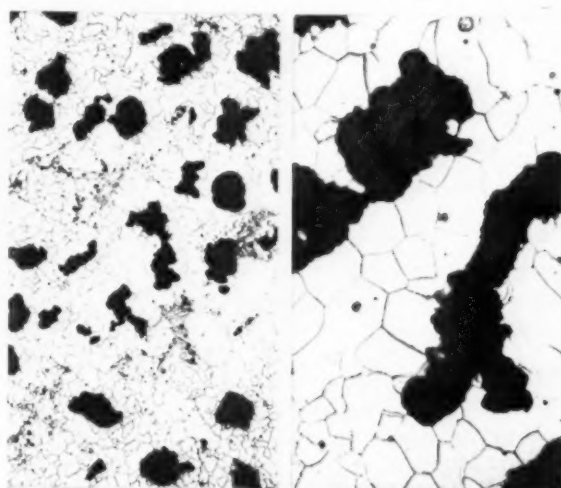
**No Defect, No Variation**—No significant variation in tensile or yield strength is shown by tensile specimens classified under X-ray



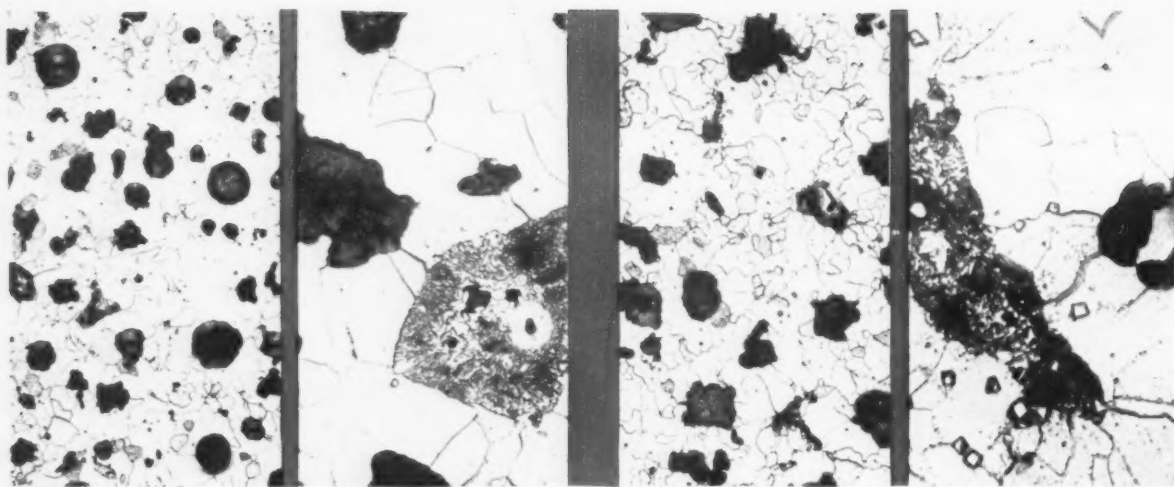
**FIG. 2:** Reproduction of exograph of tensile specimens reported in Fig. 1 shows condition of the three X-ray grades. Nos. 6 and 7 fall in X-ray Grade 3, No. 11 is Grade 2, and all the others are in Grade 1. Grade 1 means no indication of defect, Grade 2 is minimal defect, and Grade 3 substantial defect.



**FIGS. 3 & 4:** Good grade seen at 100 and 500x has evenly distributed spheroidal graphite in ferrite matrix. Etch, 10% Nital.



**FIGS. 5 & 6:** Here, graphite nodules are irregular but material is still acceptable. 10 pct Nital etch, 100 and 500x.



**FIGS. 7 & 8:** Incomplete transformation of pearlite becomes evident in this sample of ferritic nodular iron. 10 pct Nital etch, 100 and 500x.

**FIGS. 9 & 10:** Combination of irregularly shaped graphite and incomplete transformation of pearlite is seen here. 10 pct Nital etch, 100 and 500x.

Grade 1. In this grade, the difference between tensile strength and yield strength is about 13,000 psi. Variations from this average are well within the limits of experimental error.

Even a slight indication of defect, however, is enough to reduce this gap to about 6000 psi (test bar No. 11, Fig 1); the reduction is due to a fall in the ultimate tensile strength, while the yield strength remains practically unchanged.

The presence of more substantial defect indicated by X-ray Grade 3 reduces the gap between tensile strength and yield strength to a bare 2000 to 2500 psi, and the values of both drop rapidly.

**Correlate With Micros** — If typical strength requirements for the 60-45-10 material are the measure of acceptability, castings of Grade 1 are uniformly acceptable, while those of X-ray Grade 3 are uniformly rejectable. Radio-graphic determination alone, however, is not enough basis for the disposition of castings falling in Grade 2. For these it's necessary to examine the microstructures.

Ferritic nodular cast iron is fundamentally nothing more than a fully graphitized gray iron. The mechanism of the graphitization

process is still unknown, but it is known that graphitization occurs in certain steels as the result of long exposure to relatively high temperatures. As the result of this graphitization, the steel is transformed into a ferritic matrix with substantially spheroidal graphite. This is exactly the microstructure of ferritic nodular cast iron; apparently the inoculant does in seconds for gray iron what years of exposure to high temperature does for steel.

**Can Stop Part-Way**—Gray iron and fully nodularized ferritic nodular iron are only the two terminal points of a process. It's possible for the process to become arrested at some point short of full nodularization, due to insufficient inoculant, improper inoculation procedures, or other causes.

When this happens, the flake graphite, which is a characteristic constituent of gray iron, does not agglomerate into spheroidal nodules. It either remains in its original flake form or is transformed into a platelet which appears under the microscope as either a thin, bacular form or a disc. It gives the impression of a section through a spheroid, the form depending upon the orientation of the platelet.

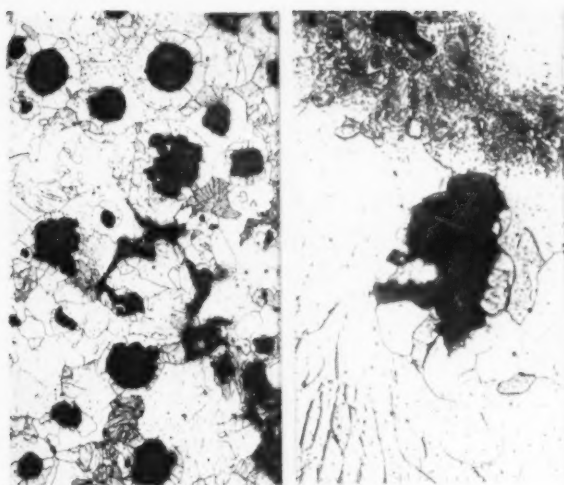
When either flakes or graphite

platelets are present in the metal, they act as slip planes and lower the tensile strength of the ferrite matrix. The loss in tensile strength is a function of the frequency of occurrence of the flakes or platelets, as well as being dependent upon the degree to which the platelets differ from a spheroid.

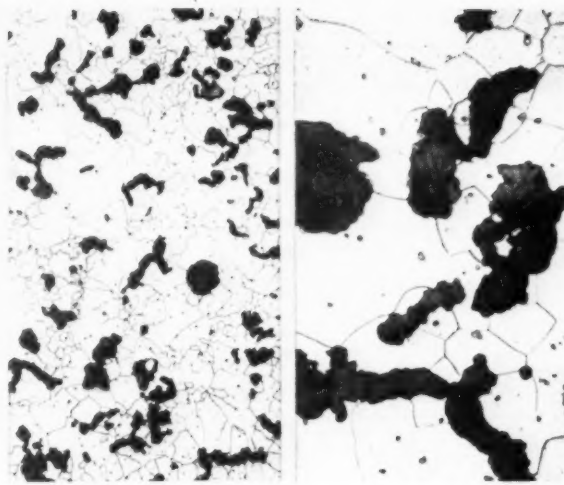
**Strong But Still Unsound** — It may well be that nodularization has proceeded far enough for the sound metal to exceed specifications in tensile and yield strength, and just meet the 10 pct elongation requirement; but when this material is further weakened by gas porosity or other internal defects, the loss in strength and ductility becomes cumulative and the material may no longer be satisfactory.

The situation becomes a little more complicated when pearlite is present in the matrix to any considerable degree; the high strength of pearlite may offset the harmful effects of flake graphite on strength. Low elongation coupled with high tensiles generally indicates this condition.

The amount of pearlite acceptable depends upon the application. Where ductility is the primary consideration, pearlite should be kept to a minimum; but for long use



**FIGS. 11 & 12:** Flake and platelet graphite, with incomplete transformation of pearlite. Some flakes are angular. 10 pct Nital. 100 and 500x.



**FIGS. 13 & 14:** Poor structure has flake and platelet graphite in ferritic matrix; spheroidal graphite is virtually absent. 10% Nital. 100 and 500x.

at elevated temperatures where strength is important, it's well to remember that pearlite is unstable at temperatures above 800°F. When this pearlite is transformed to graphite nodules in a ferrite matrix by long exposure to heat, strength which the pearlite gave the material is no longer there. If the original pearlite was accompanied by substantial amounts of flake graphite, the weakening effect of the latter becomes dominant and failure may occur.

**Full Range Illustrated**—Typical microstructures found in ferritic nodular cast iron are shown in Figs. 3 to 14, arranged in their order of acceptability. Figs. 3 and 4 show the microstructure of a good production grade of ferritic nodular iron. While some mis-shaped nodules occur, the great majority of the nodules are substantially spheroidal, the matrix is almost completely ferritic, and there are no indications of either flake or platelet graphite.

Less desirable, but still good, is the structure shown in Figs. 5 and 6. The shapes of the nodules show substantial deformation of the spheroidal structure; more exactly, they indicate that the material froze before full spheroidization could

occur. This condition is not as severe as the presence of either flake or platelet graphite, but is a step in that direction. The almost total absence of pearlitic structure is a saving characteristic. It gives reasonable assurance that the material will not lose any of its strength in any application for which ferritic nodular iron is recommended.

**Poorer But Acceptable** — The presence of irregular shapes combined with substantial areas of pearlite make the structure shown in Figs. 7 and 8 even less desirable, though not necessarily rejectable. Once again flake or platelet graphite are almost completely absent.

Progressively worse conditions are shown in Figs. 9 to 14. The irregular shapes occurring in Figs. 9 and 10 begin to assume platelet form and the presence of large areas of pearlite suggest a loss of strength after prolonged service at elevated temperatures. Even though room temperature short-time tensile strength of this material may be within required limits, this particular microstructure is not acceptable for high temperature application.

Flake or platelet formation in Figs. 11 and 12 is even more pro-

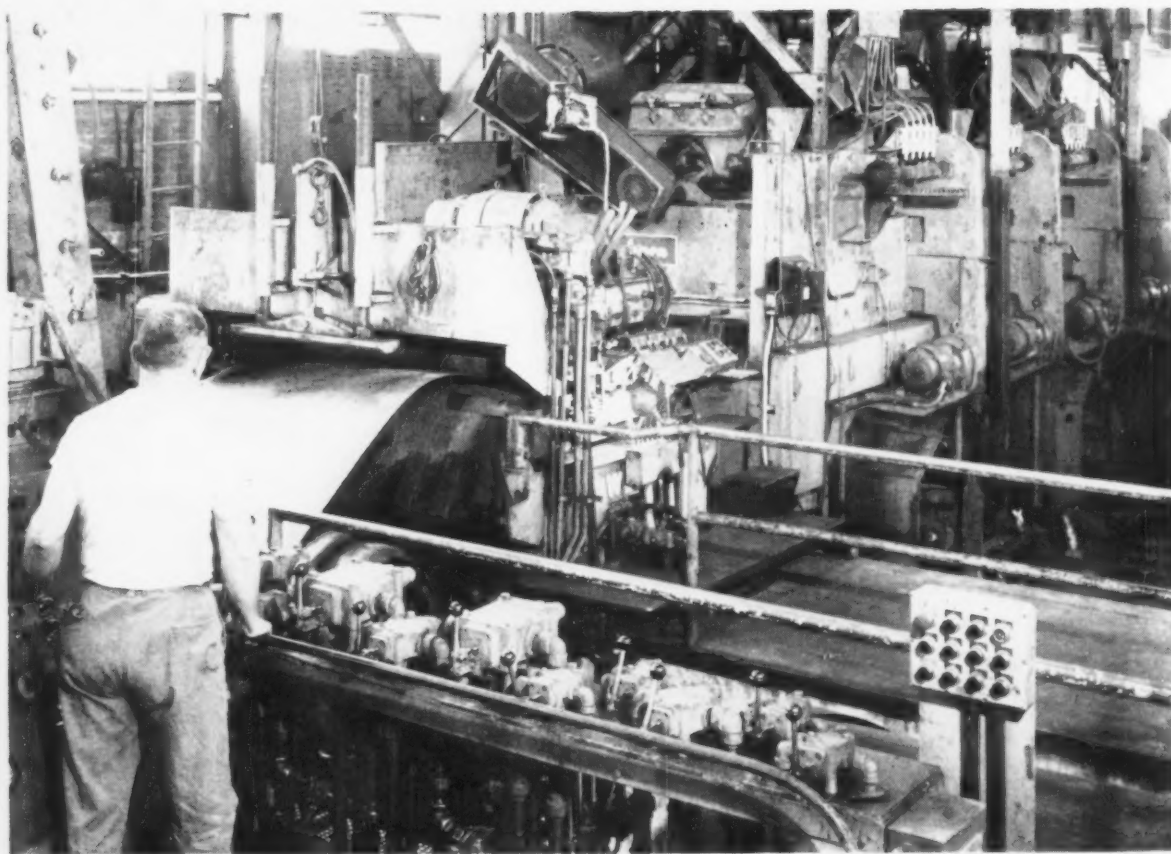
**Table I Composition, Pct**

Heat	Si	Mn	C
A	2.60	0.30	3.30
B	2.64	0.29	3.77
C	2.60	0.19	3.75
D	2.71	0.24	3.58
E	2.41	0.20	3.64
F	2.53	0.20	3.52
G	2.60	0.30	3.40
H	2.49	0.22	3.25
J	2.51	0.15	3.25

nounced, while in Figs. 13 and 14 it reaches the ultimate undesirable limit.

Thus, the basis for acceptability of nodular iron castings should be a combination of both X-ray and metallographic inspection.

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**FEED END:** Coil stock enters pinch rolls. Shot blast chamber on right cleans up to 3200 sq ft per hour.

# Continuous Shot Blast Treats Coil Stock

By T. M. Rohan—Cleveland Regional Editor

**There's a growing trend toward use of coil stock in place of pre-cut sheets. Handling coil stock is easier. And treatments can be continuous.**

**But sometimes production needs call for using some of each.**

**Shot-blasting proves a highly versatile preprocessing tool that readily adapts to one or the other.**

■ A continuous shot blast line for surface preparation of hot rolled sheet steel is displacing batch-operating pickling tanks. The new line at The Midland Steel Products Co., Cleveland, processes coil stock continuously through roller leveling, cleaning, shearing, and oiling.

Although not in full production as yet, it is expected to handle loads up to 500 tons per day at Midland's auto and truck frame plant. The \$1 million unit can handle stock up to 66 in. wide.

**Stress On Coil Stock**—The new line is in keeping with the trend in industry toward the use of coil stock instead of cut lengths. Midland figures on better quality and uniformity of finish with the process. The problem of pickle liquor disposal is eliminated.

The line has provision for 50 pct greater shot blast capacity by the use of additional blasting wheels.

It was designed and built by Wean Equipment Co., Cleveland, in cooperation with Fred Nash, plant engineer for Midland's Cleveland plant.

The new line has both plate and coil handling machinery at the feed end. Next in the line are roller levellers, a Pangborn shot blast chamber, an adjustable shear, and a magnetic stacker.

A central console, furnished by Clark Controller, Cleveland controls the operation of the whole



line. There are also remote operating stations.

**Stock Feed**—When running coil stock, a small dolly is used to deliver the coils from the adjacent storage yard. The coils are placed on a mandrel hydraulically and threaded into pinch rolls. The mandrel is scheduled to be replaced by powered supporting rolls because the inside clearances of the coils vary too much for mandrels.

When sheets are being run, a magnetic feed system carries the sheets from the adjacent storage and feeds them into the pinch rolls.

After roller levelling, the stock

enters the Pangborn shot blast booth. Eight slingers in the booth hurl 1/64th in. diam (S170) shot. Each slinger throws 30 tons per hour at 140 mph velocity to clean up to 400 sq ft per hour.

When coil strip is being run, the shear can cut it in 8 to 24 ft lengths and at angles up to 20°.

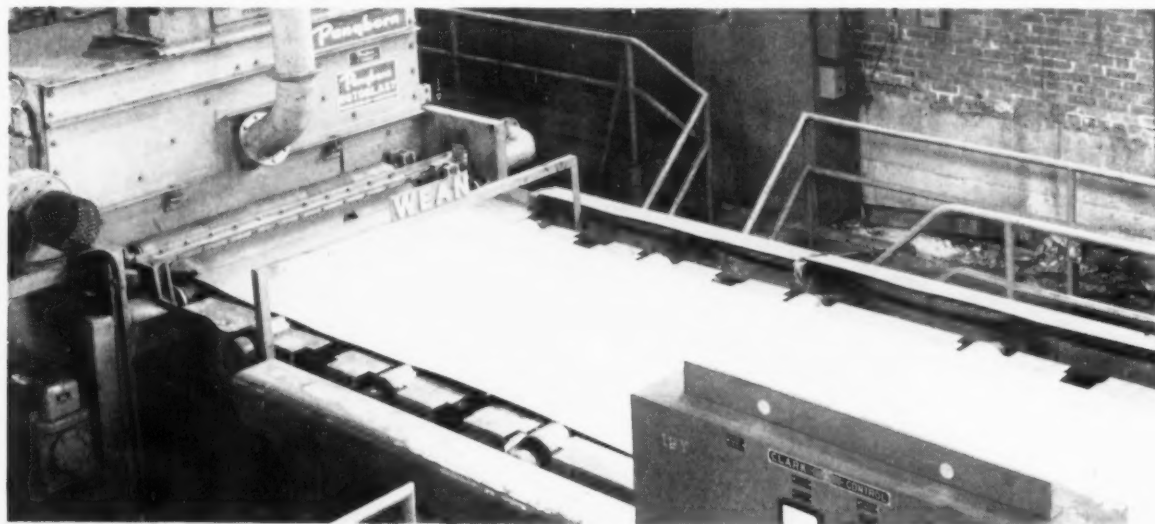
**Wide Capacity**—The line can handle coil stock from 12 to 66 in. wide and from 0.050 to 0.180 in. thick. Strip 12 in. wide zips through at 130 fpm. Forty-eight inch strip goes through at 95 fpm and 66 in. at 80 fpm.

All steel over 0.180 in. thick is

purchased in cut lengths rather than coils. Sheet in the same widths as coil stock is handled in lengths from 8 to 39 ft.

There is about 800 hp connected in the line with the largest unit being 100 hp. Controlwise, the line is divided into two sections. Adjustable voltage for the direct current motors of each section is supplied by a Clark Packaged Speed Control unit.

The speed of each section can be controlled independently, or they can be synchronized. Each PSC unit also supplies the direct current for the magnetic sheet handler at its end of the line.



**CLEAN RESULTS:** Coil sheet emerges from shot blast chamber with high quality and uniformity of finish.



**CENTRAL CONSOLE:** Operator controls entire line from here. Shear cuts cleaned coil to lengths.

# Braze 240 Parts Per Hour

**Leak-free joints in oil pans are made at a high rate at Buick's Flint, Mich., plant.**

**A two-station induction unit silver brazes 240 parts per hour. Pans are fed vertically to save space and improve positioning.**

■ A quick, one-step method for installing the drain bushing in the oil pan of the Dynaflo transmission is now in use at GM's Buick plant at Flint, Mich. The 1.5-in. bushing internally threaded to receive the drain plug, must be securely installed in a hole in the end of the drawn steel oil pan. Buick finds the most practical way to do this and obtain a permanently leak-free joint is by silver brazing.

The joint must be strong, not only to withstand the torque of installing the drain plug during original assembly, but also to stand up under the possibility of overtightening when a car is brought in for service. This need is met since a well-brazed joint between steel parts has a shear strength in torsion ranging from 35—48,000 psi, depending on the type of steel.

In making the assembly, the bushing and pan, are first thoroughly degreased to remove shop oil and dirt that might interfere with joint soundness. Each then receive a coating of Handy-Flux. The operator fluxes the end of the bushing by dipping it directly into the flux pot and fluxes the joint area of the oil pan (both surfaces) by brushing.

He then slips a ring of 3/16-in. round Easy-Flo 45 silver brazing alloy, made by Handy & Harman, New York, onto the bushing and inserts the bushing in the hole from inside the pan, with the ring of silver alloy nesting between the shoulder on the bushing and the inside wall of the pan. With the ring in this location, the alloy brazes the bushing to both the wall

of the pan and the circumference of the hole.

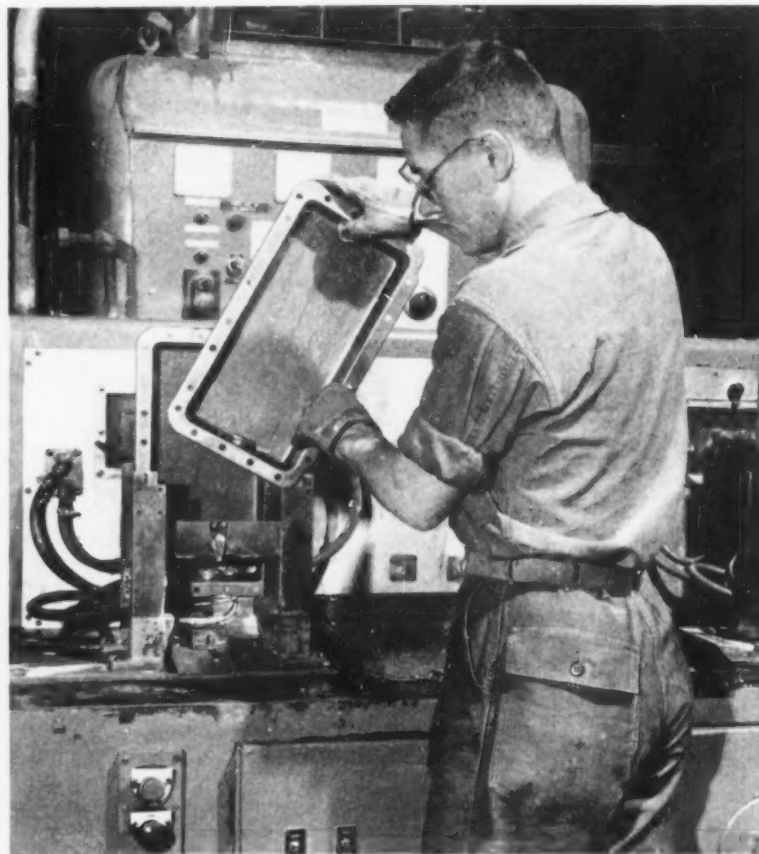
The brazing set-up, consists of a two-station 25-kw Welduction heating machine with two induction coils at each station. The pans are placed vertically, bushing-end down, in guide rails which position the protruding edge of the bushing within the diameter of the induction coil. Besides saving space, another advantage of brazing the assembly with the pan vertical is that the bushing seats itself against the pan by gravity when the alloy ring melts.

Induction heat is advantageous here since relatively little heat is absorbed by the heavy bushing. The induction coil located on the outside of the pan, so the heat will

draw the molten Easy-Flo alloy all the way through the joint and produce a fillet around the protruding edge of the bushing.

After loading the fixtures the operator starts the automatically-timed brazing cycle and shifts to the second heating station to remove the previously brazed and cooled pans. This two-station brazing set-up is capable of producing 240 brazed joints per hour. From the brazing machine the operator places the pans in a shallow tank containing a mixture of soluble oil and water to remove the flux while it is still warm.

Every pan is then checked for joint soundness on a pneumatic testing machine. Leakers can be quickly repaired.



**BRAZING SETUP:** Fluxed and assembled pans are brazed in this two-station induction brazing machine.

# NOTE

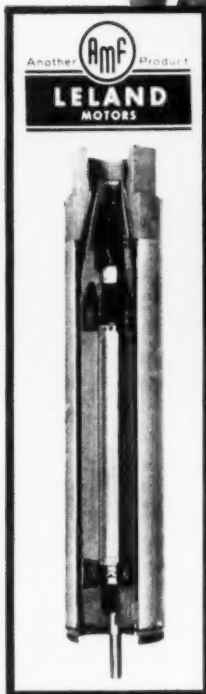
LONG, SATISFACTORY PERFORMANCE OF  
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COMPANY TO TAKE ITS ALUMINUM  
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CUTAWAY of the radically new submersible explosion-proof pump motor made by LELAND ELECTRIC COMPANY which can be installed right in the gasoline storage tank. In this pump motor the fluid passes between the stator core and the extruded shell while in the conventional submersible pump motor a double shell is used. Stator shell of the LELAND MOTOR is  $13\frac{3}{16}$ " long and  $3\frac{1}{2}$ " O.D. and is made from a hollow Revere Aluminum Extrusion.

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At this stage Revere T.A. (Technical Advisory) Service, which in the past had proved helpful, was called in for collaboration and the advantages of extrusions vs. castings were discussed. By using extrusions there would be no problem of porosity which is often present in castings. Substantial savings in weight would be made and the only machining would be to the ribs on the inside of the tube. No machining of the outside of the tube would be required, which would be necessary should a casting be used, while the smoother surface on the inside would improve flow characteristics—an important factor in this particular pump motor as the fluid being pumped passes between the stator core and the extruded shell. With the smooth surface of an extrusion, less horsepower would be used to pump a given

volume of fluid. The result was the Revere Aluminum Extrusion you see above.

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### **Welders**

Welders in 300, 400 and 500-amp ratings are outlined in a publication. It includes product features, specifications, power requirements and operating data for ac welders. (General Electric Co.)

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### **Gearmotors**

Gearmotors and package drives are the subjects of an 8-page booklet. Horizontal, vertical, right angle, open, enclosed, explosion-proof, ac and dc units are illustrated. (Westinghouse Electric Corp.)

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### **Fork Trucks**

Specifications and mechanical features of a 5000-lb capacity gas-powered fork truck are contained in a 6-page brochure. (Clark Equipment Co.)

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Mounted wheels in all standard shapes and sizes and in a complete range of gradings to meet all precision grinding requirements are described in a chart and folder. All these mounted wheels are finished to precision running truth. This is important where these tiny wheels are used on high-speed portable

grinding machines for delicate touch-up operations. (The Carborundum Co.)

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### **Sign Blanks**

Aluminum highway and street sign blanks are covered in a brochure. It lists sizes and specifications for standard blanks. (Reynolds Metals Co.)

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### **Locking Fasteners**

Precision aircraft bolts incorporating nylon locking inserts are described in a 16-page bulletin. (Standard Pressed Steel Co.)

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### **Surface Condenser**

Designed for production of vacuum for prime mover service with large steam turbines, new surface condensers are outlined in a bulletin. (Southwestern Engineering Co.)

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### **Dust Collector**

In its eight pages, a brochure offers data on a vertical rotor dust and fume eliminator. The wet-method collector can be constructed of corrosion resistant alloys or lined where necessary. (Schmieg Industries, Inc.)

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### **Handling Setup**

A materials handling system is dealt with in a catalog. This setup, it states, offers many advantages in the storage, moving and handling of



parts and materials in process. The publication suggests how the positioning stand and multi-duty box combination can increase production and eliminate old-fashioned stoop-bend-stretch methods. (Union Metal Mfg. Co.)

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### Plug Valve Lubricant

Inside a 16-page catalog are lubricant recommendations for nearly 4000 service conditions for which lubricated plug valves can be used. It also shows lubricated plug valve accessories, fittings, automatic lubricators and lubricant guns. (Homestead Valve Mfg. Co.)

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### Gas Thermostat

A bulletin covers a heavy duty, high capacity gas thermostat. (Robertshaw-Fulton Controls Co.)

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### Gages, Threaders

Carbide gages and threading tools are described in an 8-page bulletin. Included are plain cylindrical and thread plug gages. Taps and thread milling cutters for threading abrasive materials are also described. (Detroit Tap & Tool Co.)

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### Air Conditioning

A folder describes centrifugal water chillers, sizes 150 to 500. (Airtemp Div., Chrysler Corp.)

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### Instruments

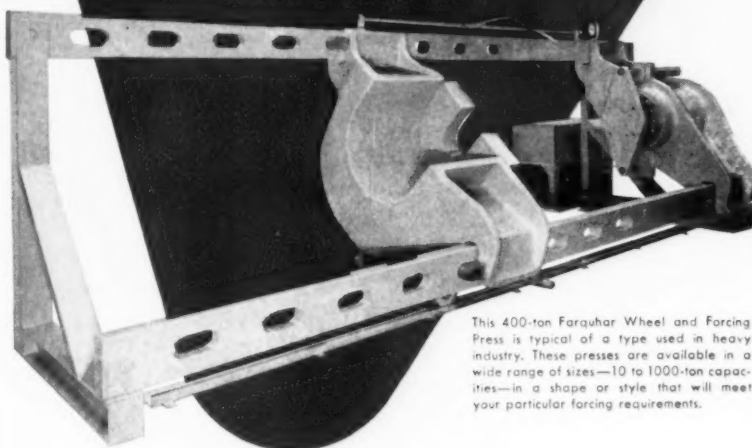
Temperature control instruments and recorders are reviewed in a 4-page bulletin. (Wheelco Instruments Div., Barber-Colman Co.)

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### Hand Stoning

Hand stoning is the subject of a 24-page handbook. It tells how choosing the proper abrasive stone results in high finishes and long cutting tool life. The booklet lists

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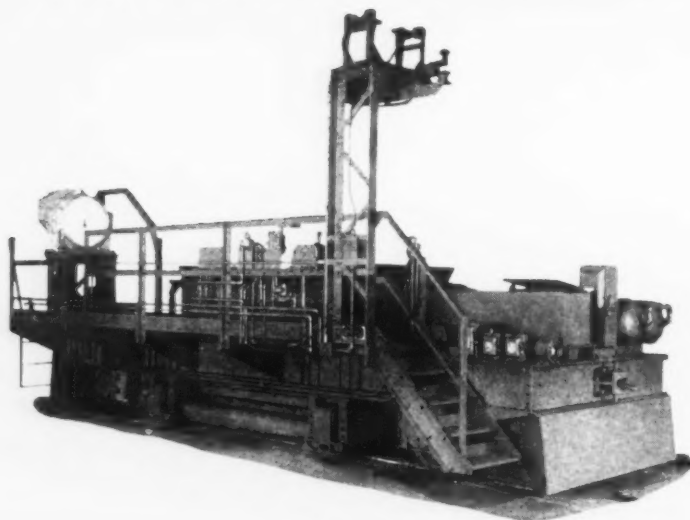
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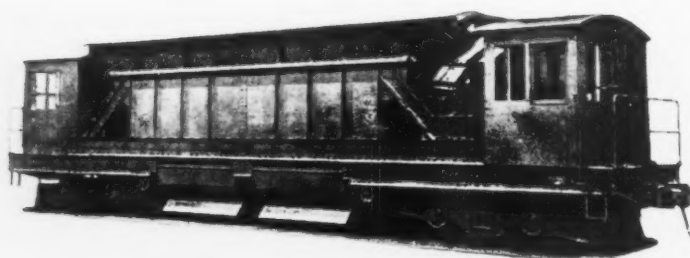
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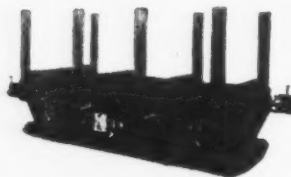


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scores of special shapes, types and sizes available, either in natural stones or those made in electric furnaces. (Behr-Manning Co.)

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## X-Ray Equipment

Portable x-ray equipment appears in a folder. This equipment provides high accuracy for radiographic inspection of castings, welds, assemblies, and aids improvements and repairs on metal products. (Mitchell Radiation Products Corp.)

For free copy circle No. 16 on postcard, p. 101

## Clay Guns

Two new clay guns for use with electric furnaces are outlined in a bulletin. The pair, modifications of large guns for blast furnaces, have 3- and 6-cu-ft capacities. Each has ample power for slugging tapping holes. (William M. Bailey Co.)

For free copy circle No. 17 on postcard, p. 101

## X-ray Inspection

A bulletin describes X-ray inspection procedures. It covers specifications, classifications and general cost information. (Lebanon Steel Foundry.)

For free copy circle No. 18 on postcard, p. 101

## Hydraulic System

How close tolerances can be continuously maintained on surface grinders with a new hydraulic system is described in a folder. (Thompson Grinder Co.)

For free copy circle No. 19 on postcard, p. 101

## Thermal Element

In 32 pages, a booklet describes a temperature control element. It describes how it works, how the disc actuates thermostats, circuit breakers and inherent overheat motor protectors, and where these controls are used. (Spencer Thermostat Div., Metals & Controls Corp.)

For free copy circle No. 20 on postcard, p. 101

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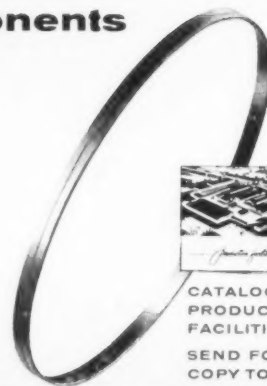


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## FREE LITERATURE

This section starts on Page 96

These publications describe money-saving equipment and services . . . they are free with no obligation . . . just circle the number and mail the postcard.

### Bench Arbor Press

Design and construction features of a 10-ton capacity hydraulic bench arbor press are listed in a bulletin. Accessories that add to versatility of the press are illustrated. (K. R. Wilson, Inc.)

For free copy circle No. 21 on postcard

### Materials Handling

A panorama of materials handling ideas appears in a new company publication. The 16-page presentation contains over 60 different photos; each depicts a solution to a specific materials handling problem. (Lewis - Shepard Products, Inc.)

For free copy circle No. 22 on postcard

### Vacuum Valves

High vacuum valves are outlined in a 32-page catalog. It discusses requirements imposed by high vacuum service which often are combined with severe corrosion conditions, high temperature, vibration and other severe mechanical stresses. (NRC Equipment Corp.)

For free copy circle No. 23 on postcard

### Plastic Sheet

Neoprene sheet is analyzed in a data sheet. It discusses the material's physical and chemical resistance. (Metalweld Inc.)

For free copy circle No. 24 on postcard

### Drafting Tips

A handy booklet shows 59 shortcuts to speed drafting and computation work. Clearly written and illustrated, it offers new approaches to old problems. The section on

calculating ideas contains 10 tips including easy ways of remembering the signs of trig functions, dividing a circle into parts, and locating decimal points. (Frederick Post Co.)

For free copy circle No. 25 on postcard

### Porcelain Enamel

Industrial porcelain enamel as a protective finish for industrial equipment and components is described in a 20-page booklet. It deals with applications requiring resistance to corrosion, abrasion, heat and thermal shock. (Erie Enameling Co.)

For free copy circle No. 26 on postcard

### Hand Lift Trucks

Hand lift trucks are covered in a 16 page booklet. It tells how various single-stroke mechanical, multi-stroke mechanical, and hydraulic hand lift trucks operate. General factors for selecting and operating hand lift trucks are also given. (Assn. of Lift Truck & Portable Elevators Mfrs.)

For free copy circle No. 27 on postcard

### Soldering

Written especially for production personnel involved in soft and hard soldering, a six-page manual provides a summary of the origin and uses of soldering. It describes various solder and flux types, nine different soldering methods, basic characteristics of certain metals which give them "solderability" and "conductability," and more. (Anchor Metal Co., Inc.)

For free copy circle No. 28 on postcard

### Refractories

You can eliminate daily patching in the melt zone with a new silica brick material. So suggests a refractory firm's literature. (Illinois Clay Products Co.)

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### Hot Riveting

Hot riveting is discussed in a company's publication. It also includes an item on two production

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## FREE LITERATURE

welders that turn out 18 miles of studding in two 8-hour shifts each day. (Taylor-Winfield Corp.)

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## Steel Belting

Hinged steel belting is described in a bulletin. It covers five standard forms of the belting: (1) plain, (2) perforated, (3) dimpled, (4) multi-winged and (5) cleated. The 6-page publication contains simplified assembly instructions for mass-produced, interchangeable belt components. The belts handle chips, flash, scrap, hot forgings, castings, etc. (May-Fran Engineering, Inc.)

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## Microswitches

Switches for several applications appear in a data sheet. (Micro Switch Div., Minneapolis - Honeywell Regulator Co.)

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## Chain Hoist Safety

Several important safety tips on chain block use appear on a new wall-type chart. Not a piece of sales literature, this chart reminds users to be extremely careful when using such equipment. It points out certain do's and don'ts widely known but sometimes forgotten. (Manning, Maxwell & Moore, Inc.)

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## Grind Wheel Dresser

Want to dress grinding wheels quickly and accurately? A folder tells how. It describes a new dresser that does precision work on grinding wheels to any desired form at a rapid rate. (Threadwell Tap & Die Co.)

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## Heating Elements

Solutions to four difficult "heating problems" appear in a technical publication. It explains how sprayed-on, film type heating ele-

ments overcome space and/or weight limitations. These elements are light in weight (1/10 lb per sq ft) and space saving (about 0.015-in. thick). (Electrofilm, Inc.)

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## Moisture Monitor

A bulletin describes a process moisture monitor. (Consolidated Electrodynamics Corp.)

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## Arc Welding

A 28-page booklet of interesting articles on welding from all over the world is now available. (Hobart Brothers Co.)

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## Steam Equipment

A 60-page catalog contains complete descriptions, illustrations, dimensions, capacities and prices of steam traps, strainers, separators, flash separators, reducing valves, block steel valves and engine stops. (Strong Steam Specialties Div., Strong, Carlisle & Hammond.)

For free copy circle No. 38 on postcard

## Fans, Mancoolers

Portable utility fans and mancoolers are illustrated in a 4-page bulletin. (Aerovent Fan Company, Inc.)

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## Buckets, Hoppers

Side-dump and bottom-dump buckets and hoppers are shown in a bulletin. In addition, it contains a table of weight per cu ft of various materials ranging from "ash" to "zinc." (Penn Iron Works, Inc.)

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## Chain Fence

Chain link fence for maximum security installations is described in a bulletin. It describes a four-gage steel fabric for government setups, industrial plants engaged in defense research and production, etc. (Colorado Fuel & Iron Corp.)

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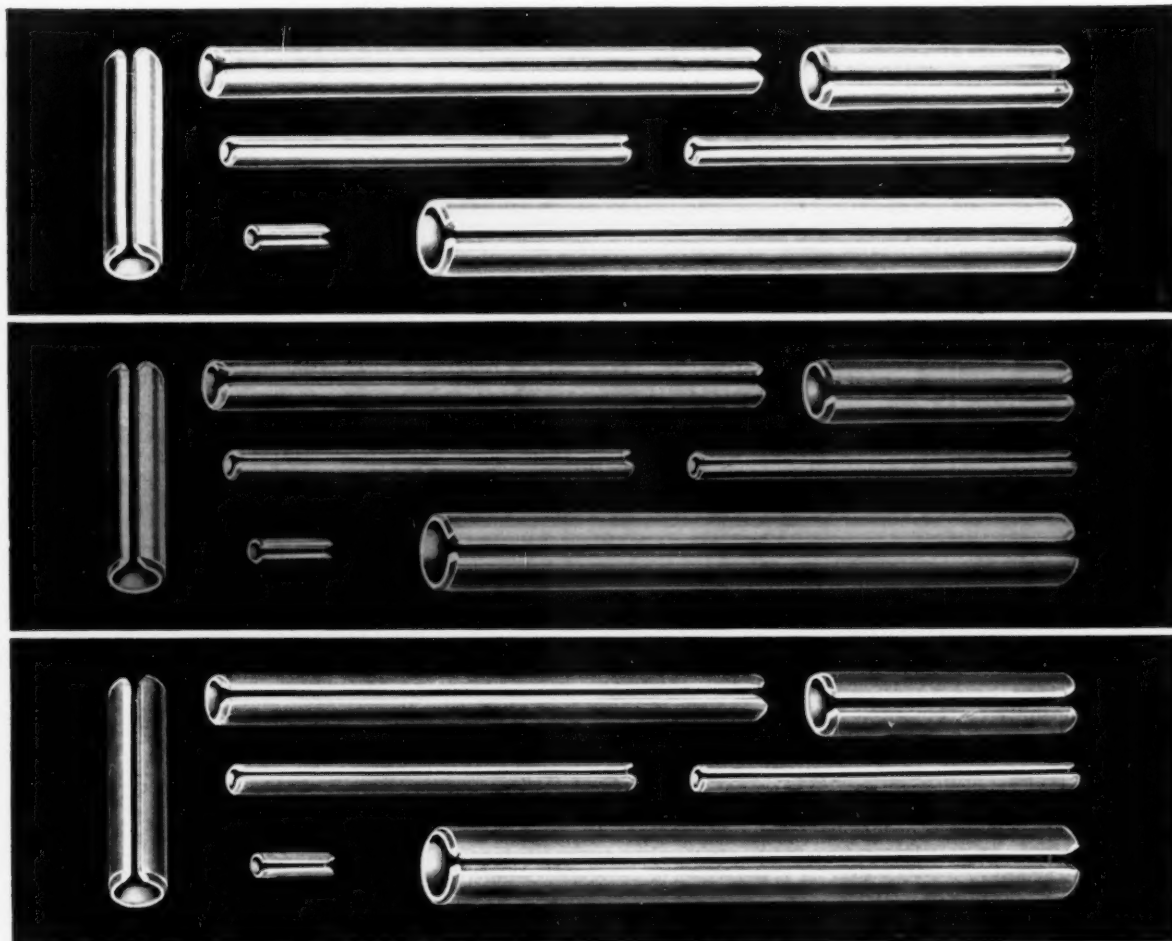
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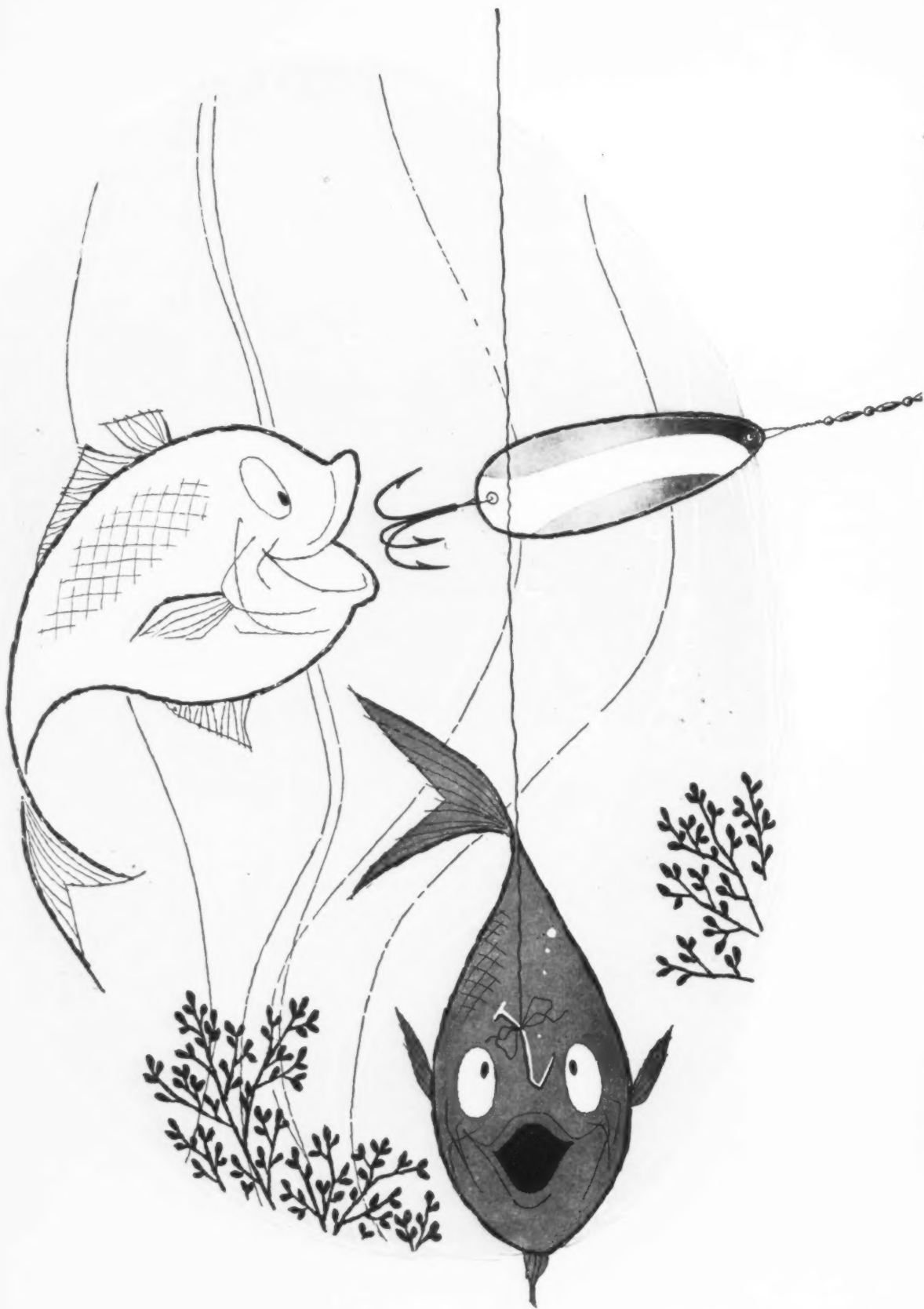
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Fuse Wire

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Hook and Eye Wire  
Mattress Wire  
Picture Cord Wire  
Picker Tooth Wire  
Pin Ticket Wire  
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Ring Traveller Wire  
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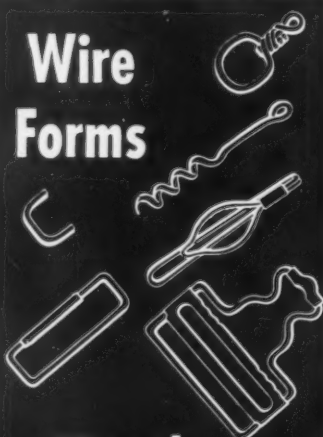
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Lingo Wire  
Lintel Wire  
Loop Wire  
Merchant Quality Wire  
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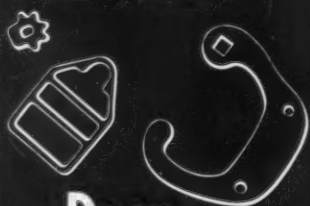
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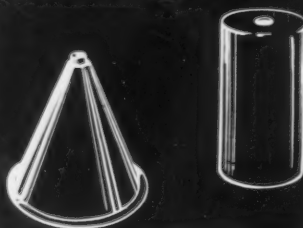
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## You Arbitrate It!

### THE SPRY COREMAKER

From the files of the American Arbitration Association.

Although Paul W., a coremaker, was 63 years old, he was just as spry as many of the younger men in the foundry. Nevertheless, the foreman assigned him to do only bench cores. Other coremakers, however, were expected to work at the bigger stuff on the floor as well. This arrangement proved practical while there was plenty of work in the shop.

But last summer it became necessary to lay off four coremakers and management decided that Paul should be one of the four to go. Paul actually had more seniority than some of the men who were retained, but the union contract provided that seniority would apply where the employee had "The necessary skill, ability and fitness to perform the available work." The company thought this limitation on the application of seniority justified.

The union couldn't go along with the company's judgment in this mat-

ter. "There are four men below Paul on the seniority list," said the shop steward. "It's their jobs that are becoming available, not his."

"With a reduced crew, we have got to have men who can do bench or floor work as the need arises," answered the superintendent. "There won't be enough work left to keep Paul busy on bench cores."

Eventually the case went to arbitration. How would you rule?

### The Arbitrator Ruled:

The arbitrator did not agree with the union's interpretation of available work. If one of the junior coremakers had been laid off, his job would have become "available." The question would then be whether Paul could fill it. The answer, according to the arbitrator, would be in the negative. Paul's limited ability as a floor coremaker was held to override his seniority status.

Caution: The award in this case is not an indication of how other arbitrators might rule in other apparently similar cases. Arbitrators do not follow precedents. Each case is decided on the basis of the particular history, contract, testimony and other facts involved.

## NEW BOOKS

**"Engineering Economy,"** by H. G. Thuesen, helps develop "economy mindedness" and creativeness, while providing solution techniques. 581 pp. \$6.95 per copy. Prentice-Hall, Inc., 70 Fifth Ave., New York 11.

**"Investment Casting Engineering & Design Manual"** explores the assets and limitations of the process. 50 pp. \$5 per copy. Investment Casting Institute, 27 E. Monroe St., Chicago 3, Ill.

**"Essentials of Machinery Procurement and Development"** delves into the complex situation of replacing units obsoleted by progress. It stresses the importance of intelligent planning. 71 pp. \$2.50 per copy. (\$1.75 for members.) American Management Assn., 1515 Broadway, New York 36.

**"Gear Hobbing and Shaving"** describes several British machines, what they do, and how they do it. \$3.50 per copy. Morey Machinery Co., Inc., 383 Lafayette St., New York 3.

**"Standard Metallizing Symbols"** tells how to specify metallizing requirements simply yet accurately. By using signs, it advises, you can avoid a lot of written instructions and save valuable time. \$1 per copy. American Welding Society, 33 W. 39th St., New York 18.

**"Terms in Nuclear Science and Technology"** is a glossary. \$5 per copy. American Society of Mechanical Engineers, 29 W. 39th St., New York 18.

**"Boron, Calcium, Columbium & Zirconium in Iron & Steel"** attempts to round up all available data on the subject. It puts these into one volume, correlating and evaluating material from many widespread sources. 533 pp. 207 illustrations. \$14.00 per copy. John Wiley & Sons, Inc., 440 Fourth Ave., New York 16.

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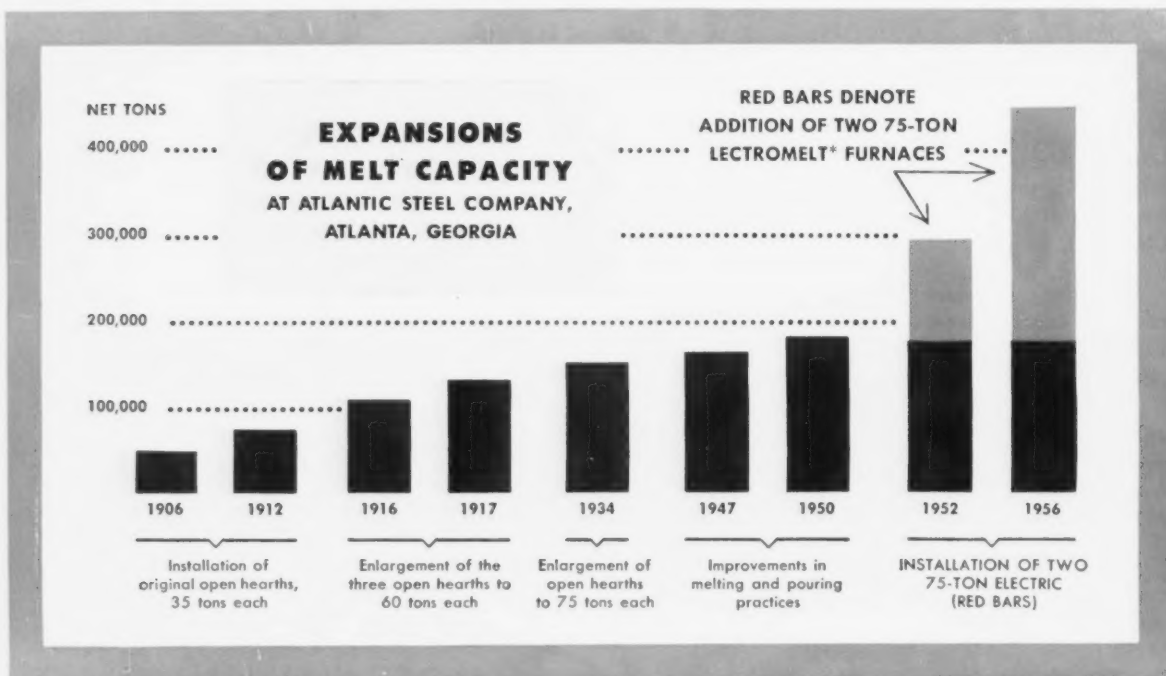
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Electric furnace first cost is 40% less.

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More precise temperature control and no contamination from fuels.

Faster heats, because charging time is cut in half.

Greater flexibility; need run only to suit demands.

Operating costs are consistently lower; ingots average 5% less.

Catalog 9-B describes Lectromelt Furnaces.

Lectromelt Furnace Division, McGraw-Edison Company,  
312 32nd Street, Pittsburgh 30, Pennsylvania.

# Lectromelt

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**WALLACE BARNES STEEL DIVISION** - Producer of High-Carbon Strip Steel

# Uses End-welded Studs As Tong Holds in Forging

**You can speed forging output by sawing billets in half. Instead of using one part of the forging as a tong grip while forming the other, weld a stud in one end.**

**Use this as a tong hold on the half-weight blank.**

■ Using end-welded studs as tong holds saves a forging outfit nearly one-third in production costs. In addition, it makes the job a little easier for workers while speeding output.

Presently in use at Octigan Forge Div., H & B American Machine Co., Inc., Chicago, the new method works like this: In double forging of fitting yokes, a worker cuts 40-lb billets in half. An operator using a gun welds  $\frac{5}{8}$  x 3-in. no-thread type studs to the up-ended billet halves, now actually 20-lb billets themselves. Forgers then use these studs as grips while forming the item.

**What It Means** — A major advantage to the new technique is the reduction of fatigue on the hammer man. Now he only has to handle 20-lb billets instead of 40-lb ones.

This was a waste of time. Whereas a heater formerly carried 60 lb for a 20-lb forging, he now only carries 40. He adjusts furnace heat only once when the forging temperature of the initial load is reached. This results in a 10-pct



**With a weld gun, a worker fits stud-grips on forge billets.**

drop in operator fatigue, reports the firm.

In addition, the system saves on billet steel. Using low or medium carbon steels, the savings in material may not entirely offset the cost of the tong-hold stud. But coupled with the increase in production efficiency, its user figures it is a highly attractive setup. The same method can be employed to forging of alloys or stainless steels. Studs apply

## Perforations perplexing you?

MASONITE?  
METALS?  
PLASTIC?  
RUBBER?



If you have a design problem that's got you down maybe Hendrick can be of help. Sometimes the easiest and quickest way to enhance a product's beauty is to include a pleasing pattern of perforations in its design. Hendrick perforated metal not only helps increase a product's overall attractiveness, but also adds to its saleability as well. And whatever material you're using . . . whether it's metal, masonite, rubber, plastic, hard or insulated board for decorative display or fabricating purposes you can draw on Hendrick's long experience and perforating facilities to fill the bill. Write for details.

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### Want More Data?

You may secure additional information on any item briefed in this section by using the reply card on page 101. Just indicate the page on which it appears. Be sure to note exactly the information wanted.

in the same manner with these.

**The Old Way** — Prior to using stud welding, only half a billet was forged at a time. The unforged portion, of course, served as a hold. This part had to be returned to the furnace for re-heating; actually, the second forging was a completely separate operation.

The previous system caused both cold steel and billets for re-heating to go into the batch-type furnace at the same time. This required repeated temperature adjustment to prevent burning of the steel. Naturally, furnace heating efficiency was down.

Stud welding equipment used are products of Nelson Stud Welding Div., Gregory Industries Inc., Lorain, Ohio.

### Gives Data on Atom

If you're looking for information on nuclear subjects, the Atomic Energy Commission has a booklet for you. It lists and describes technical information publications and services offered by the agency.

A list of research and development reports, books and special compilations of data, bibliographies, abstract journals and a literature search service are just a few of the items described. In addition, the book sets forth methods for locating and using informational material (i.e. abstract journals, card catalogs, etc.)

The guide is obtainable without charge from the Technical Information Services Extension, Atomic Energy Commission, Box 1001, Oak Ridge, Tenn.

### Meet on Annealing

World authorities on the annealing of steel will gather at Cleveland this fall. During a two-day meeting at Case Institute of Technology, the international experts will exchange ideas on the annealing of low carbon steels. It's to be held Oct. 29 and 30. The symposium is a joint project of the institute and Lee Wilson Engineering Co., Inc. of Cleveland.

## UDYLITE HI-Q ZINC ANODES

*They don't cost more — They're just worth more*

Here at Udylite, Zinc Ball Anodes are precision made by automation — from the zinc slabs to the packaged balls ready for shipment.

Quality is controlled not only by automatic casting and packaging but by equipment designed to eliminate impurities. Udylite High Quality Zinc Balls more than meet the specifications set by the most discriminating buyers and the most rigid Government specifications.

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DETROIT 11, MICHIGAN

# New Production Ideas

## Equipment, Methods and Services

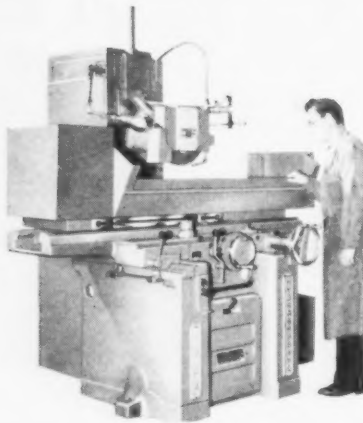


### Air-Powered Tools Bundle Steel Bars Fast

Air-powered, this strapping tool speeds bundling and packaging of steel products. It also reduces operator fatigue. In the past, it was no easy task to tension and seal strapping by hand around bulky bundles of steel stock. Now, thanks to the power stretcher, one man handles such jobs with push-button ease. Here's how it works: While the stretcher holds the strapping at its one-ton tension, the workman

crimps the seal with an air-powered sealer. The sturdily built stretcher weighs only eight pounds. Yet it provides up to a ton of predetermined tension on bundles of irregular shape. Built to stand hard service, the sealer crimps each seal uniformly to assure high joint strength. It virtually eliminates mis-crimping by the operator. (Signode Steel Strapping Co.)

For more data circle No. 42 on postcard, p. 101



### Surface Grinders Have Deep Throat Capacities

For real deep-throated, balanced capacity, this precision surface grinder provides a full 12 in. under its 12-in. wheel. For effortless travel up and down the column, the unit's head, spindle and motor are balanced on the elevating screw and column ways. Chances of getting hung up on the column ways and breaking wheels is eliminated by the extra long, full contact head ways engineered into the grinder. There is no "extension ladder wobble"

either with the machine's undiminishing bearing surface design. In addition to this unit, which provides a full 12-in. under its 12-in. wheel, the manufacturer also makes grinders with 18 in. under the wheel. The complete line includes the following sizes: (1) 8 x 24 x 12, (2) 12 x 18 x 12, and (3) 12 x 24 x 12-in. (Abrasive Machine Tool Co.)

For more data circle No. 43 on postcard, p. 101



### Sweeper Cleans In Congested, Narrow Areas

Like any place else, narrow and congested areas get dirty—sometimes even more than open spaces. So they've got to be cleaned. How? Well, the old, dependable hand sweeper behind a brush is one way. A faster, more efficient method is to have a power operated unit do the job. There is, or was, one drawback to this modern way—many sweepers just won't fit into narrow aisles or congested areas. Such is not the case with this new sweeping unit. Its overall width is just 38 $\frac{3}{4}$  in.

Yet, it cleans a 30-in. swath giving the same results as some larger models. Designed for small as well as large plant use, the unit has a large dirt hopper capacity and a special filtering vacuum system that eliminates any dust bag. It features an automotive transmission (three speeds forward, one reverse) and full all-around vision with no obstructing dust bag or tanks. (Wayne Mfg. Co.)

For more data circle No. 44 on postcard, p. 101



# the NAKED

# TRUTH

*Even after a year's exposure to storms, salt and humidity on a Florida pier a two-piece hollow kitchen cabinet door of Weirzin electrolytically zinc-coated steel remained gleaming bright on the inside, and held its finish beautifully on the outside. Note what happened to the inside of the plain steel door that went through the same test. That's rust and lots of it . . . a completely ruined product both inside and out.*

There's a profitable moral for *you* in that story—of a comparison test conducted by a leading manufacturer of kitchen cabinets for its own satisfaction. The moral: You can protect your products right from the start by using Weirzin right from the start. Its skin tight electrolytically fused zinc coating, uniformly applied, takes the toughest fabricating steps without peeling or flaking. Because it *does* stand up under the severest bending, drawing, crimping, flexing, you can forget coating or recoating—and its extra cost.

Furthermore, chemically treated Weirzin takes paint, enamel and lacquer beautifully, holds them indefinitely, eliminates underfilm corrosion.

**Send for free booklet . . .** get all the facts on Weirzin's many cost-saving advantages. Write to Weirton Steel Company, Dept. A-9, Weirton, West Virginia.



**WEIRTON STEEL COMPANY**

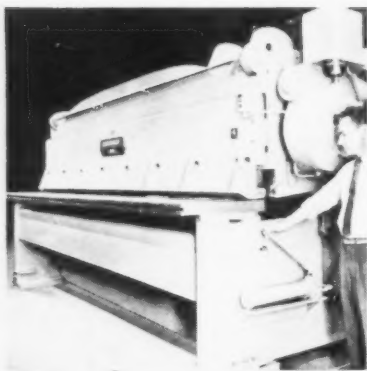
WEIRTON, WEST VIRGINIA

A DIVISION OF

**NATIONAL STEEL CORPORATION**



## NEW EQUIPMENT

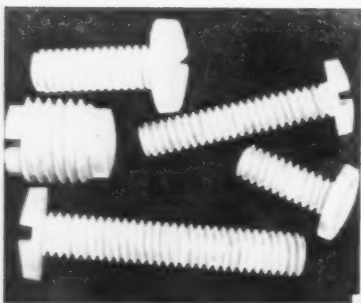


### Machine Shears Wire Roadway Mesh Materials

Equipped for shearing wire mesh of the type used to reinforce concrete roadways is this shear. It features 14 ft between housings. It's design capacity is (49) 4/0 wires of 0.394-in. diam. A special item on this machine is a unique sliding-mount arrangement. This permits manual horizontal position adjustment over an 8-in. range. The unit can be easily moved on its special

mounts. A heavy steel torque-tube provides extra rigidity for the shear. Although a conventional hold-down system isn't required to hold the wire mesh during the cut, an adjustable material guide is provided to prevent it from "tipping up" during the cut. Other features of the unit include: all-steel interlocked construction and electric clutch control. (Cincinnati Shaper Co.)

For more data circle No. 45 on postcard, p. 101



### Nylon Screws Fit Into Close Tolerance Jobs

Molded one at a time, these nylon screws are perfectly uniform. They're recommended where close tolerances are important. Initial stock sizes for machine screws are 6-32, 8-32 and 10-32, ranging from 3/8 to 1 in. long. Headless set screws up to 5/16 in. OD and 13/32 in. long are also available.

Threads are Class 2 unified standard. Their producer credits the screws' accuracy to a method of turning them out free of flash and ready to use. Thus all screws are identical in all dimensions. (Gries Reproducer Corp.)

For more data circle No. 46 on postcard, p. 101

## ROUGH-PICKLED BAR

## to CLEAN-DRAWN TUBE

Paul, this tube just won't sell until we get a smoother finish on it. The mill scale and our messy drawing lubricant are hurting our tube sales.

Gene Edwards from Pennsalt is urging me to try their Foscoat-Foslube system. I'll ask him to come in and discuss this problem.

"Pennsalt Foscoat® is a dry, adherent phosphate base, and Foslube® is a compatible soap-type lubricant. Used together, they'll clean up your severest draws—your shop, too—and give your tube the finish it deserves."

But how much will they cost, Gene?

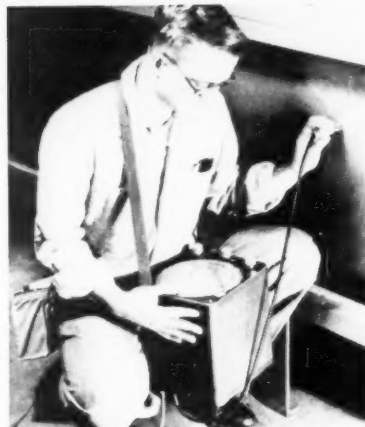
No more than your present lube, which you admit isn't working out. You'll save production time, and dies too. Besides, putting on Foscoat and Foslube is a cinch.

## Portable Ultrasonic Unit Finds Wall Thickness

Want to know how thick that wall is—even though you can't get behind it? Or is it a cored casting's eccentricity you're looking for? Possibly you've got many items you must measure but you can't get on both sides of them with a pair of calipers or a micrometer. If such problems harass you, maybe this portable instrument is your answer. By simply reading a "pip" on a TV-type tube face, this resonant ultrasonic unit measures thicknesses

from one side as rapidly as a crystal probe is touched to the test surface. It does this on almost any sound conductive material. Battery operated, the setup is easily carried via shoulder straps. It measures thicknesses from 0.025 to 5 in. with only three crystals. Accuracy is  $\pm 2$  pct. Some typical uses: finding thin spots in walls, laminations, eccentricity in cored castings and cast iron pipe, lack of bond. (Magnaflux Corp.)

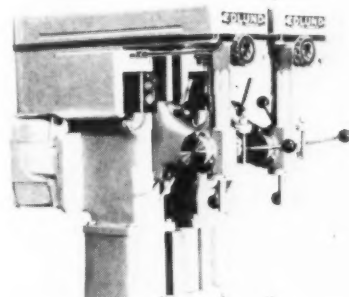
For more data circle No. 47 on postcard, p. 101



## Sensitive Driller Makes Holes At High Speeds

Designed for high speed, sensitive drilling of small parts and assemblies is this drilling machine. Its maker recommends the unit for high production, long runs and large work. Featuring a 10-in. overhang, this machine comes in standard or special purpose combinations. It can be adapted to meet many re-

quirements. Models of from one to six spindles, with speed ranges from 625 to 10,000-rpm particularly adapt it to the needs of high speed sensitive drilling of parts and assemblies. Speed control customized to each job is possible by simply turning a knob conveniently located on the upper column. As the ma-



Let your Pennsalt salesman work with you to improve metalworking with chemical know-how... in cold working, cleaning, plating, and organic finishing. Learn more about Pennsalt service—mail the coupon.

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Steel that goes into this bumper, being installed on one of America's fine cars, is ordered and tested to rigid specifications. The steel must be exceptionally clean, bright, flat, and with no surface defects. It must have close chemical analysis and internal qual-

ity so it will draw deeply without "orange peel." The company installing this bumper is so careful that in the last  $\frac{1}{2}$  million bumpers it has scrapped only  $\frac{1}{2}$  of 1% due to metal failure! Pittsburgh Steel's sheet constantly meets these exacting specifications.

**Pittsburgh Steel's quality standards pay off  
as automakers in a highly competitive market demand...**

## **Better Sheet Steel For Making Bumpers**

Today, the makers of America's better cars are more than just critical when they specify steel for making bumpers. They realize that the broad and complex chromed areas front and back on their models must enhance the appearance of the cars if they expect to beat competition in today's tight market. They demand the best, and then test exhaustively against strict specifications to make sure they get it.

That's where Pittsburgh Steel Company shines. With its outstanding new cold rolling facilities backed

up with the latest technology, it daily produces sheet for a variety of the toughest applications. When an automaker says of its bumper stock that yield must be held to 30-33,000 psi, and elongation must be 38% before failure—that's duck soup for Pittsburgh Steel. Orders like this come from one company that prides itself on less than one-half of one percent of scrap due to metal failure in the last half-million bumpers!

One bumper plant inspector put it this way: "We have to be especially careful to watch steel quality because,

although the draw isn't unusually deep on wrap-around bumpers, it is very critical since it involves complex bends up to 120°. And even the tiniest stretcher-strain marks or other defects would show up like a sore thumb under the bright chrome finish."

If Pittsburgh Steel's sheets can meet standards as high as these, they can help you solve your forming problems, no matter how tough they may be. When you buy from Pittsburgh Steel you can always be sure you are getting sheet that has:

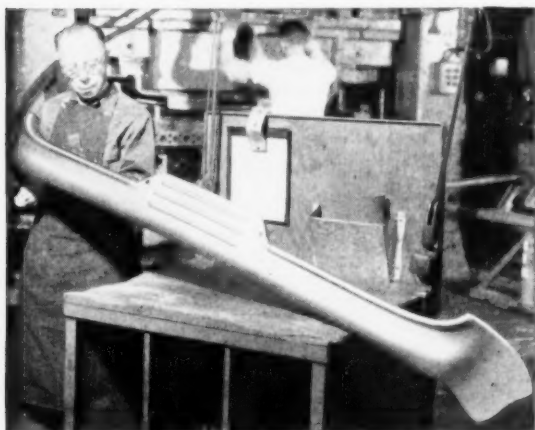




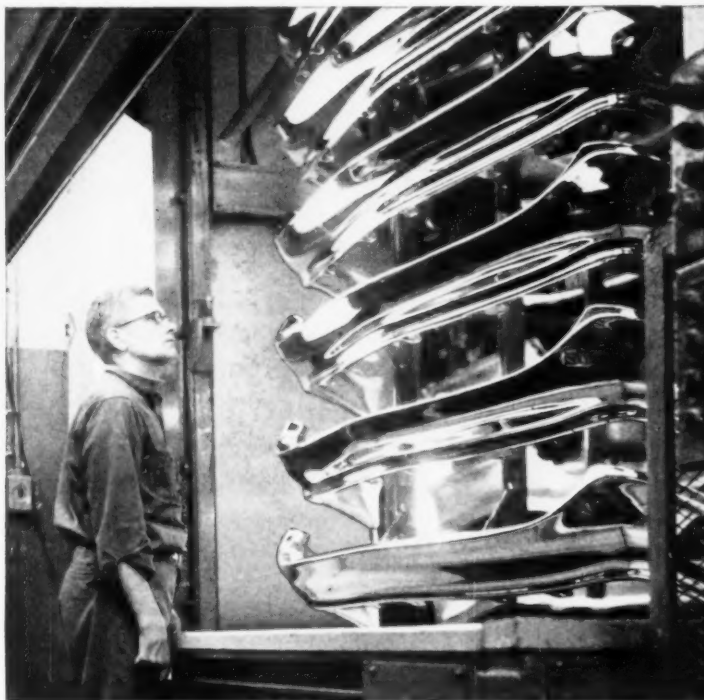
Grinding provides a surface finish which must not deviate more than 10 micro inches and since rarely more than 2% is taken off, the original sheet surface had to be excellent.



The draw of this massive press is critical since complex angles up to 120° must be achieved without steel failure. Sheet steel supplied by Pittsburgh Steel Company has excellent formability which stems from good internal quality.



After all drawing and stamping operations are complete, each bumper is carefully inspected before going to the plating line.



Each bumper gets a last close look after plating. The bright finish magnifies any defects so the surface must be perfect.

- **Superior Internal Quality**—proper uniform grain structure free from flaws and subsurface imperfections.
- **Good Surface**—clean, bright and smooth—free from scratches, pits and slivers.
- **Flat and Uniform**—consistent from sheet to sheet to save you scrap.
- **Formability**—excellent capacity to withstand deep drawing.

There is an experienced Pittsburgh Steel Company sales engineer as close to you as your telephone. He is at your service—eager to help you solve your toughest sheet problems.

## Pittsburgh Steel Company

Grant Building

• Pittsburgh 30, Pa.



### District Sales Offices

Atlanta  
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Cleveland  
Dallas

Dayton  
Detroit  
Houston

Los Angeles  
New York  
Philadelphia

Pittsburgh  
Tulsa  
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## consider the profit angle



### ... in salvaging and marketing your sheet metal scrap!

If your metal stamping or metal forming operations are generating sheet metal scrap in substantial volume — you have a disposal problem to solve.

In many plants the baling of sheet metal scrap has proved a highly profitable operation in the disposal process — resulting in such benefits as lower scrap handling costs, better use of floor space, increased production, higher average scrap prices.

Galland-Henning Hydraulic Baling Presses have been serving industry for many years in the low-cost salvaging of sheet metal scrap. If you are planning a new plant, the modernization or expansion of present facilities — the orderly baling of your sheet metal scrap is worth considering from the overall profit angle. Galland-Henning offers you competent counsel on this subject, without cost or obligation.

**GALLAND-HENNING MFG. CO.**

2725 S. 31st St., Milwaukee 46, Wisconsin

## **GALLAND-HENNING**

### **SCRAP METAL BALING PRESSES**

## NEW EQUIPMENT

chine doesn't have to stop for belt or gear changes, hours of valuable production time can be saved. Quick, accurate selection of speeds is made possible through a variable-speed drive. This, through a variable diameter V-pulley system, delivers smooth, instantly variable speed action through the full machine range. A pre-positioned micrometer depth gauge allows control over tool penetration. The large, double knurled knob with clearly etched micrometer markings sets anywhere within the spindle's 3-inch traverse. The machine is available in pedestal or bench models. (Edlund Machinery Co.)

For more data circle No. 48 on postcard, p. 101

### Tandem Wire Mill

Designed for high speed operation, a new tandem wire flattening mill holds very close tolerances. The machine consists of two mill stands, each equipped with 8 in. diam x 5 in. wide rolls. These are faced with cemented tungsten carbide rings. A welded structural steel base carries the mill stands, two dancer roll mechanisms and a traversing recoiler. The mill produces strip in thicknesses ranging from 0.010 in. up and in widths to 5/8 in. Requiring no elaborate foundation, the mill comes either as a completely self-contained package unit or as individual components for erection at the user's plant. (Stanat Mfg. Co., Inc.)

For more data circle No. 49 on postcard, p. 101

### Voltmeter

Battery operated, an electronic voltmeter uses transistors and printed wiring. Needing no warm-up period, it gives stable readings soon as it's turned on. The instrument measures from 1-mv full scale to 300-v full scale, within the frequency range of 20 cycles to 500 kc. It is 6 x 8 x 6 in. in size and weighs 5 lb. (Consolidated Electrodynamics Corp.)

For more data circle No. 50 on postcard, p. 101

IMPROVING OVERALL  
OPERATION THROUGH  
**GERLINGER**  
MASS-HANDLING



## He moves a 30-oz. lever; the Gerlinger moves 30,000 lbs.

Where extra power is needed to lift, move and stack capacity loads up to 40,000 pounds, Gerlinger giants like this one do the job like no other fork lift trucks built. And do it with instant fingertip control!

More and more industrial plants, mills and foundries are finding out that top production and profits go hand-in-hand with the mass-handling efficiency you get with a job-proved Gerlinger.

You'll see your investment pay off almost immediately—made possible through Gerlinger features like these:

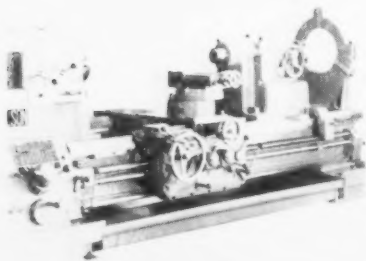
- *Pivotal-mounted steering assembly*  
—stabilizing load on any road
- *One-lever lift-tilt control*  
—positioned for safer operation
- *Counter-active weight distribution*  
—better traction, maneuverability
- *Heavy-duty steel channel frame*  
—bonus years of reliable service

- *Maximum-power torque converter*  
—smoother driving, less wear
- New records of production and profit are the usual report when Gerlinger Fork Lift Trucks are on the job. Get latest catalog and see the many ways you will benefit. Write Gerlinger Carrier Co., Dallas, Oregon.

**Leaders for 38 years  
in building Fork Lift  
Trucks and Carriers**



Gerlinger Carrier Co., Dallas, Oregon, is a subsidiary of Towmotor Corporation, Cleveland, Ohio



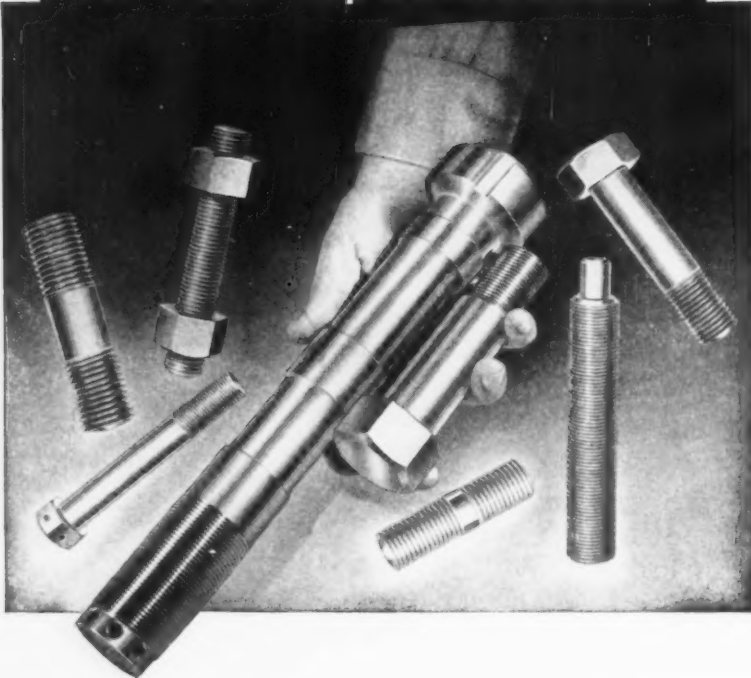
## Lathe Features 100-hp Motor For Peak Loads

This lathe employs a 75-hp motor capable of delivering over 100-hp for peak load requirements. The machine tool swings 44-in. over the ways and 31-in. over the cross slide. Its headstock controls provide a range of spindle speeds from 7 to 650-rpm in true geometric progression. The one-piece casting tail-

stock has a two-speed spindle. This one-piece feature affords the tailstock with a high degree of rigidity. The two-speed spindle provides a rapid movement for setting the center and a slow rate for drilling, boring, etc. A totally enclosed gearbox delivers 61 feeds and 45 leads. The lathe's apron is of the extra-heavy, box type design, completely enclosed. (Axelson Mfg. Co.)

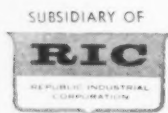
For more data circle No. 51 on postcard, p. 101

from the hand of the specialist ...  
To Your Specifications



## ERIE Bolts • Studs • Cap Screws • Nuts In Alloys • Stainless • Carbon • Bronze

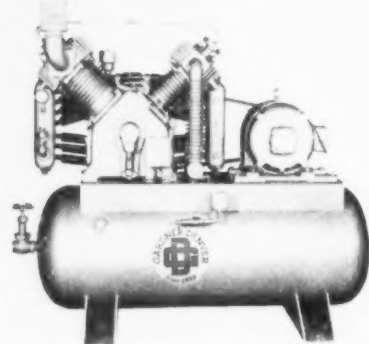
Designers and engineers from every field of industry submit their exacting specifications to us for special fasteners to resist corrosion, extremes of temperature, tensile, fatigue, impact, and shear stresses. For more than 40 years our skilled craftsmen have met the requirements of construction and farm machinery, of transportation, refining and railroad equipment, the heavy machines of industry, pressure vessels, compressors, pumps, in widely diverse applications. We are prepared to serve you well. Send us your fastener specifications for prompt estimate.



**ERIE BOLT & NUT CO.**  
Erie, Pennsylvania  
Representatives in Principal Cities

## Compressor

Why buy a second compressor when only slightly larger air capacity is needed? So asks a company that turns out a new two-stage, air-cooled, 20-hp, two-cylinder vertical compressor. This unit, it



suggests, can fill the bill instead. In continuous service, the setup has a piston displacement of 100 cfm. at 870 rpm. Discharge pressure, up to 150 psi. On intermittent service, suitable for discharge pressure as high as 250 psi. (Gardner-Denver Co.)

For more data circle No. 52 on postcard, p. 101

## Grinding Head

Self-contained and motorized, this grinding head attachment converts planers, boring and milling machines, and heavy lathes to heavy duty grinding. The motorized vertical spindle head provides easy and quick grinding on such machines. Noted for versatility and independent operation of units,



compensation is provided for wheel wear. Fine adjustment of depth of cut is obtained through vertical adjustment of the motor-rotor by means of a spring-loaded hand-wheel. Built by a British firm, the

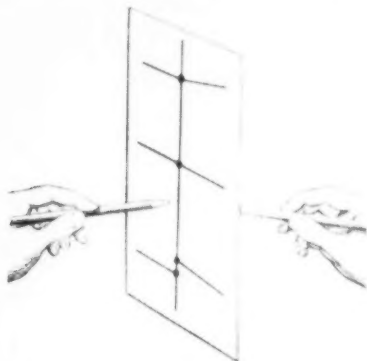


unit is motorized for 3 phase, 60 cycle, 220-440 v alternating current. It develops 1-hp at 3000-rpm. It's fitted with a cup type grinding wheel 8-in. diam by 2-in. deep. Higher powered units up to 4-hp and other wheels are available. (Air Transport Equipment, Inc.)

For more data circle No. 53 on postcard, p. 101

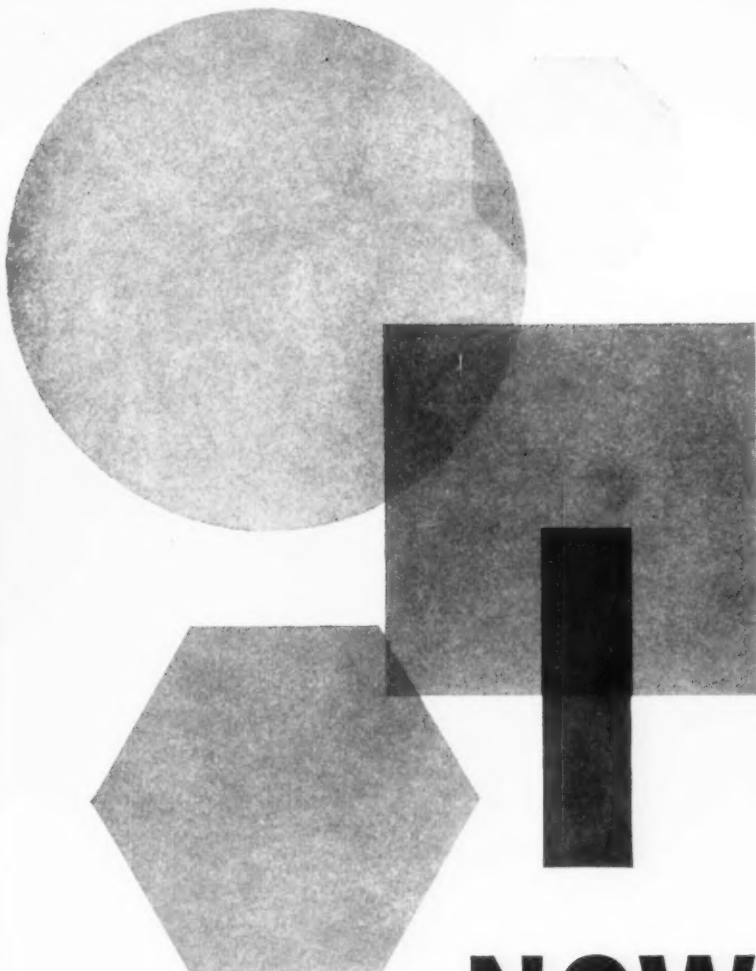
### Tracing Cloth

With a new tracing cloth draftsmen can draw unchanging details on one side, repeated revisions on the other. Erasures are made easily on one without danger of removing in-



formation from the reverse. The cloth is impervious to perspiration stains and water spotting; common solvents clean it without damage. (Charles Bruning Co., Inc.)

For more data circle No. 54 on postcard, p. 101



when you need it

# NOW

call Wheelock, Lovejoy!

For quick action — regardless of the size of your order — call Wheelock, Lovejoy for alloy steel bars, billets or forgings. Whatever size, shape or heat treatment you may need, you can get it *when you need it* by ordering directly from the W-L warehouse nearest you.

Expert metallurgists will help you select from our own HY-TEN steels or the standard AISI or SAE grades.

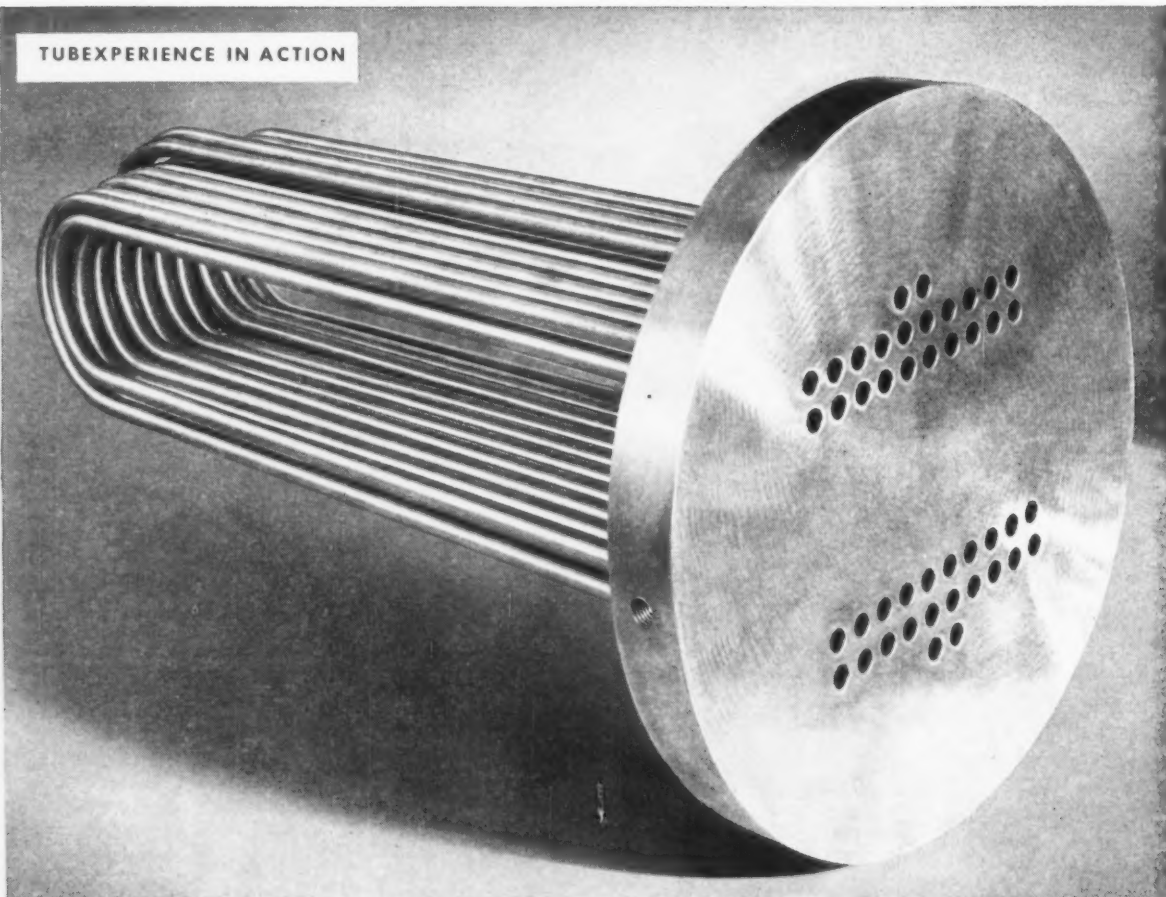
Write today to our Cambridge office for your *free* Wheelock, Lovejoy Data Sheets. They contain complete technical information on grades, applications, physical properties, tests, heat treating, etc.

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## WHEELOCK, LOVEJOY & COMPANY, INC.

126 Sidney Street, Cambridge 39, Mass.

TUBEXPERIENCE IN ACTION



Heat exchanger tubing bundle ordered by a well-known chemical firm was fabricated by the Elyria, Ohio, plant of the Pfaudler Co. Superior supplied WELDRAWN\* unalloyed titanium tubing, Grade A-40, with  $\frac{3}{4}$  in. OD and .065 in. wall.

## How Superior Titanium Tubing Beat a Corrosion Problem in a Heat Exchanger

**Customer reports:** "We chose titanium because no other material was satisfactory from the corrosion viewpoint. The results are excellent."

**Fabricator reports:** "The tubing supplied by Superior was just what we needed. And we found it would withstand a bend of  $2\frac{1}{2}$  in. radius without difficulty."

Chemical processing firms occasionally work with fluids so strongly corrosive that no tubing made from conventional materials can handle them. If you are confronted with such a problem you want titanium tubing by Superior.

Our unalloyed titanium tubing in Grades A-40 and A-55 has extremely high corrosion, erosion and cavitation resistance to a wide variety of corrosive agents.

Fabrication qualities are good, it is easy to flare and bend, and it can be spot-welded and brazed without difficulty. It is available in sizes up to  $1\frac{1}{8}$  in. OD in both seamless and Weldrawn forms.

Titanium is but one of over 120 different analyses available in tubing form from Superior. For complete technical information on Superior titanium tubing, get a free copy of Bulletin 44. Write Superior Tube Company, 2004 Germantown Ave., Norristown, Pa.

\*T.M. Reg. U.S. Pat. Off., Superior Tube Co.

### *Superior Tube*

The big name in small tubing  
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All analyses .010 in. to  $\frac{5}{8}$  in. OD—certain analyses in light walls up to  $2\frac{1}{2}$  in. OD  
West Coast: Pacific Tube Company, 5710 Smithway St., Los Angeles 22, Calif. • RAYMOND 3-1331

## The Iron Age Summary

## Watch For Steel Market Shift

Even the mills aren't quite sure how strong the last-half market upsurge will be.

The touch-and-go situation places a premium on alertness for market shift.

■ Steel mills are on tenter hooks this week. They're worried (1) over the upcoming steel price hearings, and (2) how strong the expected pickup in third and fourth quarter steel demand will be.

The mills are well-primed to cope with Senatorial questions on prices. It's an old story with them. Somebody is always anxious to probe steel pricing policies.

**Top Priority**—When the hearings get underway, possibly this week, the mills will have reams of evidence to justify their price structure. The preparation of this evidence has occupied the time of top steel executives for weeks.

For most mills, the upturn in

steel demand is a foregone conclusion. It's simply a matter of degree. Some look for the break to come late this month. Others are betting on a significant pickup in September. It depends to a large extent on automotive. The car builders have made only tentative commitments to date.

**Sheet Pickup**—It's a cinch that sheet and strip demand will be up this month from July, with a further increase looked for in September. The mills are being cagey about accepting light plate orders for production on sheet-strip mills. They don't want to overextend themselves in case automotive comes in for heavy sheet tonnages in the near future.

Meanwhile, steel user plant vacation shutdowns have about run their course. Steel buyers generally are taking a closer look at their depleted inventories. Many of them are content to let the mills worry about tiding them over with emer-

gency tonnages. But they're keeping a sharp eye peeled for a shift in the market.

**Keep Alert**—Something to keep in mind is that if a steel market pinch does develop, it will come without too much advance warning. Users of bars, sheets, welded pipe, and stainless are ordering on a short-term, small-quantity basis. The mills still don't seem to have a firm picture of the order level for the tail end of August. If there should be a general spurt in orders, no one would know it until a few weeks before it happened.

One thing the mills know for certain: The construction market will be strong for a long time to come. The big Federal roadbuilding program is barely off the ground. Yet demand for structurals and plate has lost none of its steam. The road buildup will begin to make itself felt later this year. But the big push may not show up until some time late in 1958.

## Steel Output, Operating Rates

Production (Net tons, 000 omitted)	This Week	Last Week	Month Ago	Year Ago
<b>Ingot Index</b> (1947-1949=100)	130.7	127.5	125.1	88.9
<b>Operating Rates</b>				
Chicago	82.0	81.0*	83.0	80.0
Pittsburgh	84.0	79.0*	87.0	55.0
Philadelphia	92.0	92.0	89.0	60.0
Valley	75.0	73.0*	78.0	60.0
West	103.0	101.0	99.0	40.0
Buffalo	95.0	90.0	88.0	63.5
Cleveland	84.0	71.0*	77.0	43.0
Detroit	49.0	88.0	97.0	52.0
S. Ohio River	77.0	74.0*	65.0	11.0
South	85.0	85.0	93.0	73.0
Upper Ohio R.	89.0	74.0*	81.0	73.0
St. Louis	85.0	87.0	80.0	96.0
Northeast	36.0	34.0	50.0	55.0
<b>Aggregate</b>	82.0	80.0	78.5	58.0

\*Revised

## Prices At A Glance

(cents per lb unless otherwise noted)

	This Week	Week Ago	Month Ago	Year Ago
<b>Composite price</b>				
Finished Steel, base	5.967	5.967	5.967	5.374
Pig Iron (Gross ton)	\$66.15	\$66.15	\$64.76	\$62.95
Scrap, No. 1 hvy (Gross ton)	\$53.83	\$53.50	\$54.50	\$55.50
<b>Nonferrous</b>				
Aluminum ingot	28.10	27.10	27.10	25.90
Copper, electrolytic	29.25	29.25	29.25	40.00
Lead, St. Louis	13.80	13.80	13.80	15.80
Magnesium ingot	36.00	36.00	36.00	34.50
Nickel, electrolytic	74.00	74.00	74.00	64.50
Tin, Straits, N. Y.	95.375	96.75	97.125	100.25
Zinc, E. St. Louis	10.00	10.00	10.50	13.50

# Steel Mill Equipment Steady

**Despite current steel market lag, producers with expansion plans are keeping equipment makers busy.**

**Buyer emphasis shifts from melting to soaking furnaces, from primary rolling facilities to finishing units.**

■ As far as mill equipment makers can tell, the steel industry is sticking to its guns about expansion despite current market trends.

In the present market lag, the mills are holding to the new approach. They are a little slower in ordering replacement parts; new programs are taking a little longer to get started. But there have been none of the sweeping cutbacks that marked past periods of reduced demand.

Makers of mill equipment report dollar backlogs are holding steady and in some cases improving. Despite this, there has been a general improvement in deliveries. One maker of rolling equipment is quoting 12-14 months delivery on blooming mills and other big units. A year ago, the same supplier was talking 18 months. A maker of ladle and stripper cranes is offering 14 to 15 months delivery against 18-20 months for the same volume of work a short time ago.

**Reasons Why**—The delivery improvement is due to several things. Most suppliers have expanded their own production facilities. Also, many of the big jobs, which are listed in backlogs, are past the bottleneck stages. A year ago, suppliers were subcontracting engineering work because of the overload. Today, the engineering pinch is past for most rolling mill makers.

Another big bind in recent

months has been machining. Over the past year steel producers have emphasized primary mills in their buying programs. There is always a shortage of the heavy machine tools needed for large mill housings. As the buying cycle goes from primary to finishing and processing lines, lighter tools can be used and machining goes faster.

Another big help today is the improved supply situation. Deliveries of bearings and forgings have bettered. A supply of plates and structurals is assured. Castings were never a serious problem. Small motors are available in 8 months; large motors in 14 months.

**Hungry For Business**—With all these factors increasing production, suppliers are bidding hungrily for new business. Several "distress" quotations have been reported in recent weeks. There is only one direction equipment prices can go and that is upward. Steel mills are well aware that delays in purchases mean added costs.

In the whole field of mill equipment it is difficult to generalize. A supplier's situation will vary widely depending on his specialty and his success in getting jobs. The mills are currently pushing soaking pits in line with their expansion of primary rolling facilities. One supplier reports its backlog has increased 30 pct since April.

**Delivery Factors**—On the other hand, a builder of large melting furnaces says activity is off and that this fact, along with improved steel supply, has reduced delivery time 3-4 months. One furnace man points out that delivery times can vary widely with the amount a mill is willing to spend for speed.

One large openhearth was completed last year in 12 months. Over-

time labor permitted a reduction from the normal 18 to 24 months. Normally the faster a job is done, the more it costs. However, there is a limit to the savings that can come from eliminating overtime. The best construction crews are attracted to the jobs that offer the most overtime. In cutting overtime, you can reach a point where pay savings are offset by reduced efficiency.

## Mill Equipment Delivery Promises

### PROCESSING

Continuous Galvanizing, Annealing and Tinning Lines	12-14 months
Draw Benches	9-11 months
Slitting Lines	8-10 months
Individual Slitters, Payoffs, etc.	7-8 months

### CRANES

Ladle or Stripper	14-15 months
Light Crane	8-10 months

### HEATING FURNACES

Soaking Pits	8-10 months
Slab Heating	10-12 months
Treating	6-8 months
Field Erected	8-10 months

### ROLLING MILLS

Primary	18-24 months
Hot Strip	18-24 months
Tandem Cold	12-15 months
Pipe and Tube	15-18 months
Structural	2 years
Plate	18 months

### MELTING FURNACES

Blast Furnaces	18-20 months
Open Hearths	
New Building	18-20 months
Additions	14 months



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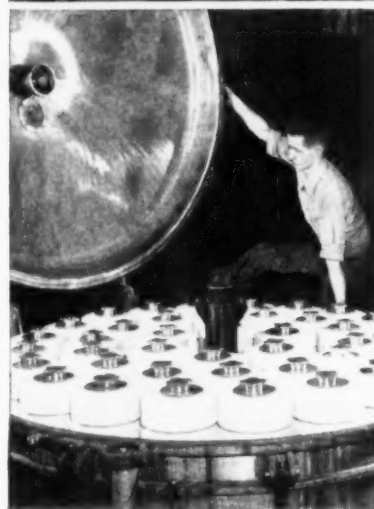
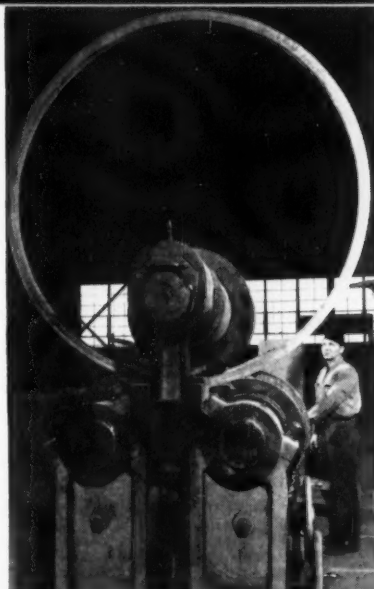
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### For Formability...

Jet engine and pressure vessel makers are using roll-formed rings in large numbers these days. Alloy Manufacturing Company in Pittsburgh is a major supplier of Stainless Steel fabricated parts, and they process this steel on ordinary "carbon steel rated" equipment without difficulty.

### For Cleanliness...

Bates Manufacturing Company, Lewiston, Maine, is a famous name in cotton goods. They used to have trouble with dyeing equipment; the iron vats held the old colors and "killed" new colors. With Stainless Steel dye kettles, old colors actually *rinse* out, without costly scrubbing.

### For Style...

G & G Woodcraft, Dinette Division, in Detroit, is selling a handsome new dinette table, designed by Gelitis, with a polished Stainless Steel top. The top is backed with plywood, and there is no metallic sound when it is struck. Stainless is a perfect material for contemporary design, and it's so *practical*.



# Steel Buyers Stress Quick Delivery

**Users continue their steel buying on a short-term, small-quantity basis.**

**But mills, scenting coming order upsurge, are readying themselves to meet it.**

■ While hand-to-mouth steel ordering continues, the mills are looking for a shift in the wind soon.

They notice that while buying is still on a short-term, small-quantity basis, the users are getting more insistent about rapid delivery. It's evident inventories are getting too low to permit a long gap between ordering and receiving steel.

Producers feel that with customers keeping them on short lead times for such products as sheet, bar, welded pipe and stainless, an order log-jam could quickly develop. And while chances of any real supply pinch this year are slim, the mills are getting ready to handle a big order upsurge.

**Getting Ready**—Continuous mills are cutting back on the amount of light plate rolling they will accept for next month. Sheet salesmen are urging buyers to think in terms of higher tonnage requirements. Some cold finished bar producers are building up stocks in order to meet expected heavier demand.

**Sheet and Strip**—Mills are still watching and waiting for September orders. Meanwhile, August ordering was generally a little better than July's. **Pittsburgh** area mills indicate customers are buying on a short-term, small-quantity basis. The order intake by **Cleveland** producers has increased slightly. Some

buyers are placing a few fourth quarter orders. Mill salesmen at **Detroit** are out looking for business to fill September books. There's room for both h-r and c-r sheet tonnage. August business is poor for **Chicago** mills, with September books filling up at an increasing rate. Delivery situation varies with some mills giving 2-4 week delivery even on c-r sheet and others about half full on September tonnage.

**Plates and Shapes**—Talk of market easing is hard to prove. Heavy plate is very tight and light plate should tighten as sheet-strip mill rolling is curtailed. At the moment, standard structurals are weak with some mills using tie-in sales with scarce wide flange beams to keep them moving. However, there's word that some mills might cut customer quotas and they could easily jam up again. An **Eastern** premium price producer reports some plate customers are by-passing part of their third quarter quotas. Same mill discontinued allocations on standard structurals and lowered prices on that product in July. **Chicago** strip mills are now loaded with September strip orders and can't handle much light plate rolling. Structural

## PURCHASING AGENT'S CHECKLIST

Beryllium makers build new plants or expand existing ones. **P. 45**

Lead base frit is being used to porcelainize aluminum. Lead may be tried on steel. **P. 46**

One-man chain saws have grown to \$40 million business in five years. **P. 47**

customers in the area are being told July orders can't be rolled until September. **Western** mills look for a heavy upsurge in structural demand in a few months when contracts for new buildings begin to come through.

**Bar** — The August market displayed a little more life than July's but nothing to brag about. A September pickup is looked to now, with present ordering on a buy-and-use basis. **Pittsburgh** cold finishers and fastener makers still have heavy inventories, but auto bar stocks are down. One strong product—reinforcing bar—suffered during recent cement strikes which delayed building activity. **Cleveland** bar producers see August shipments as up 10-15 pct above July. There was also a mild August pickup at **Chicago**. In that area cold finishers are building in-plant stocks to meet expected September demand.

**Pipe and Tubing** — Some cancellations of third quarter seamless by oil companies are disturbing producers. Suppliers feel buyers are being overly inventory-conscious and the cuts won't be continued in the fourth quarter. Butt-weld pipe is moving fairly well despite June hedge buying which was thought to have killed the market for a while. It's still often tied-in with other scarcer products in order to sell it. Linepipe is critically tight with customers on quota system. Market for pressure and mechanical tubing is weak.

**Tinplate** — July shipments are exceeding June's for one **Pittsburgh** producer, but electrolytic lines are still producing more plate than is being shipped. September electrolytic capacity for the same mill is fully booked. Some slack is expected in the fourth quarter due to the addition of new lines. Shipments for the year as a whole will probably be better than in 1955.

**Alloy Prices Raised**—High temperature alloy base prices have been raised 4 pct by Firth Sterling, Inc. Stainless steel extras were also increased by the same amount.

## (Effective Aug. 6, 1957)

Price advances over previous week are printed in **Heavy Type**; declines appear in *Italics*.

Finished Steel Composite: (per pound)				
Base price .....	5.967¢	5.967¢	5.967¢	5.374¢

Weighted index based on steel bars, shapes, plates, wire, rails, black pipe, hot and cold rolled sheets and strips.

Based on averages for basic iron at Valley furnaces and foundry iron at Chicago, Philadelphia, Buffalo, Valley and Birmingham.

Averages of No. 1 heavy melting steel scrap delivered to consumers at Pittsburgh, Philadelphia and Chicago.

	Foundry, Coke, Prompt	\$17.50-\$19	\$17.50-\$19	\$17.50-\$19	\$17.50
<b>Nonferrous Metals:</b> (cents per pound to large buyers)					
Copper, electrolytic, Conn. ....	29.25	29.25	29.25	40.00	
Copper, Lake, Conn. ....	29.25	29.25	29.25	40.00	
Tin, Straits, N. Y. ....	95.37 <sup>‡</sup>	96.75	97.125	100.25	
Zinc, East St. Louis ....	10.00	10.00	10.50	13.50	
Lead, St. Louis ....	13.80	13.80	13.80	15.80	
Aluminum, virgin ingot ....	<b>28.10</b>	27.10	27.10	25.90	
Nickel, electrolytic ....	74.00	74.00	74.00	64.50	
Magnesium, ingot ....	36.00	36.00	36.00	34.50	
Antimony, Laredo, Tex. ....	33.00	33.00	33.00	33.00	

† Tentative. ‡ Average. \* Revised.

Dollars per gross ton, f.o.b.,  
subject to switching charges.

←To identify producers, see Key on P. 138→

Base price cents per lb f.o.b. mill

Product	201	202	301	302	303	304	316	321	347	403	410	416	430
Ingots, reroll.	22.00	23.75	23.25	25.25	—	27.00	39.75	32.25	37.00	—	16.75	—	17.00
Slabs, billets	27.00	27.00	28.00	31.50	32.00	33.25	49.50	40.00	46.50	—	21.50	—	21.75
Billets, forging	—	36.50	—	38.00	41.00	40.50	62.25	47.00	55.75	32.00	28.25	28.75	28.75
Bars, struct.	42.00	43.00	44.25	45.00	48.00	47.75	73.00	55.50	64.75	37.75	33.75	34.25	34.25
Plates	44.25	45.00	46.25	47.25	—	50.75	76.75	59.75	69.75	40.25	35.00	—	36.00
Sheets	48.50	49.25	51.25	52.00	—	55.50	81.50	65.50	79.25	—	40.25	—	40.75
Strip, hot-rolled	36.00	39.00	37.25	40.50	—	44.25	69.25	53.50	63.50	—	31.00	—	32.00
Strip, cold-rolled	45.00	49.25	47.50	52.00	—	55.50	81.50	65.50	79.25	48.25	40.25	—	40.75
Wire CF; Rod HR	—	40.75	42.00	42.75	45.75	45.50	69.50	52.50	61.50	36.00	32.25	32.75	32.75

*Sheets:* Midland, Pa., *C11*; Brackenridge, Pa., *A3*; Butler, Pa., *A7*; Vandergrift, Pa., *U1*; Washington, Pa., *W2*, *J2*; Baltimore, *E1*; Middletown, O., *A7*; Massillon, O., *R5*; Gary, *U1*; Bridgeville, Pa., *U2*; New Castle, Ind., *J2*.

*Strip*: Midland, Pa., C11; Waukegan, Cleveland, A5; Carnegie, Pa., S9; McKeesport, Pa., F1; Reading, Pa., C2; Washington, Pa., W2; W. Leechburg, Pa., A3; Bridgeville, Pa., U2; Detroit, M2; Canton-Massillon, O., R3; Harrison, N. J., W3; Youngstown, C3; Sharon, Pa., S1; Butler, Pa., A7; Wallingford, Conn., U3 (plus further conversion extra); W1; New Bedford, Mass. (.25¢ per lb higher), R6; Gary, U1 (.25¢ per lb higher).

Bar: Baltimore, A7; S. Duquesne, Pa., U1; Munhall, Pa., U1; Reading, Pa., C2; Titusville, Pa., U2; Washington, Pa. J2; McKeesport, Pa., U1, F1; Bridgeville, Pa., U2; Dunkirk, N. Y., A3; Massillon, O., R3; S. Chicago, U1; Syracuse, N. Y. C1; Watervliet, N. Y., A3; Waukegan, A3; Canton, O., T3, R3; Ft. Wayne, I4; Philadelphia, D3; Detroit, R3; Gary U1.

*Wire:* Waukegan, A5; Massillon, O., R3; McKeesport, Pa., F1; Ft. Wayne, J4; Harrison, N. J., D3; Baltimore, A7; Dunkirk, A3; Monessen, P1; Syracuse, C11; Bridgeville, U2.

*Structurals:* Baltimore, *A7*; Massillon, O., *R3*; Chicago, Ill., *J4*; Watervliet, N. Y., *A3*; Syracuse, *C11*; S. Chicago, *U1*.  
*Plates:* Brackenridge, Pa., *A3*; Chicago, *U1*; Munhall, Pa., *U1*; Midland, Pa., *C11*; New Castle, Ind., *I2*; Middletown, *A7*; Washington, Pa., *J2*; Cleveland, Massillon, *R3*; Coatesville, Pa., *C15*; Philadelphia, *D5*; Vandergrift, Pa., *U1*; Gary, *U1*.

*Forgings billets:* Midland, Pa., C11; Baltimore, A7; Washington, Pa., J2; McKeesport, F1; Massillon, Canton, O., R3  
Watervliet, A3; Pittsburgh, Chicago, U1; Syracuse C11; Detroit R5; Munhall, Pa., S. Chicago, U1

**DIFFERENTIALS:** Add, 75¢ per ton for each 0.25 pct silicon in portion thereof over base; 1.75 to 2.25 pct except for base; 1.75 to 2.00 pct 50¢ per ton for each 0.25 pct manganese or portion thereof over 1 pct; 52¢ per ton for 0.50 to 0.75 pct nickel, 51¢ for each additional 0.25 pct nickel. \* Add \$1.00 for 0.31, 0.69 pct phosphorus. † Intermediate low phosphorus. ‡ Add \$1.00 for 0.31 to 0.50 pct phosphorus.

**Silvery Iron:** Buffalo 6 pct, *HI*, \$78.50; Jackson, *JI*, 14 Globe 14.1, \$77.25; Niagara Falls 15.01 15.50, \$101.00; Keokuk 14.01 15.50, \$103.50; 15.51 16.00, \$106.50. Add \$1.00 per ton for each 0.25 pct of base iron over 1.00 to 6.50 pct iron. Add \$1.25 for each 0.50 pct molybdenum over 1.00 pct. Beamster silvery pig iron (under 10 pct phos.): \$64.00. Add \$1.00 premium for all grades of silvery to 18 pct.

# Midwest Markets Move Up

**In spite of generally static markets elsewhere, Midwest markets are on the move.**

**Prices there are now above normal differential with other areas.**

■ The sensitive Midwest markets are on the upswing again. Following the aggressive bidding on industrial lists in late July, the markets edged upward in varying amounts and over strong mill resistance.

On the basis of No. 1 grades, Chicago is up \$2, St. Louis \$3, and Detroit \$2. Only a wildcat strike at a Detroit mill prevented the price there from climbing higher.

These markets are now higher in comparison with Pittsburgh than is normal. Some adjustments to the more conventional differential are probably in the wind in upcoming weeks.

By and large, secondary grades lagged behind No. 1 steelmaking grades, indicating the emphasis continues to be on good grades of scrap.

In spite of the flurry in the Midwest, the market is still in a state of summer doldrums. Most mills and brokers are moving very cautiously. Dealers are not overloaded, but there is some evidence that turnings and secondary grades are beginning to build up.

Export continues to prop the market in the East, but not to the extent that was evidenced in previous months. The only drop in No. 1 grades occurred in Philadelphia, where they sagged \$1.

This drop was counterbalanced by Chicago's \$2 increase. With no change in Pittsburgh, The IRON

AGE Composite Price moved up slightly to \$53.83.

**Pittsburgh**—An out-of-area mill provided the only activity for pegging the local market. Prices paid by this mill tended to confirm going price of No. 1 heavy melting. But No. 2 steel and No. 2 bundles were off. Local mills are studiously avoiding commitments for significant tonnages. At the same time, brokers and dealers are just as cagey about making offers at lower prices. The market here has a way of moving quickly, and brokers are afraid to go out on a limb.

**Chicago** — With prices again breaking upward in surrounding areas, Chicago prices moved in the face of strong mill opposition. A mill purchase of No. 2 bundles at \$40 produced very little scrap and had no effect on dealer prices. Further confusing the market were almost simultaneous offers by other mills to buy No. 2 bundles at \$42 to \$43, and other steelmaking grades were purchased at higher levels.

**Philadelphia** — Export activity continues to prop up this market. But it was not strong enough to keep prices of steelmaking grades from slipping \$1 this week. Heavy turnings also dropped \$1, and there is evidence of weakness in other turnings grades. Correction: In July 25, 1957 issue, the price of clean cast chemical borings was misprinted as \$38 to \$39. The correct price was \$43 to \$44.

**New York**—This market remains very quiet in a midsummer lull. Prices so far are unchanged with the exception of No. 2 bundles,

which inched down a mere 50¢ to a top of \$39.50, and No. 2 heavy melting, up \$1.

**Detroit**—A wildcat strike at one major consumer and a railroad embargo to another have prevented this market from climbing as high as sales last week would indicate. Price of No. 1 grades late last week was well over the level early this week, with the major mill closed and no deliveries possible.

**Cleveland** — The market was exceptionally quiet following the closing of the auto lists. One restricted sale of a small lot of low phos brought \$60 from a Valley mill. Blast furnace scrap is piling up in Cleveland yards again with best offer \$29 on track.

**St. Louis**—Because outside markets have encroached on the St. Louis area, local mills have counteracted the movement with increases in dealer grades of from \$2 to \$4. Other items are unchanged.

**Birmingham**—The market continues sluggish on most grades. A few electric furnace grades appear to be in short supply and are commanding premium prices from some mills. Railroad lists closing this week showed higher prices than last month.

**Cincinnati**—A local and an area mill both came into the market at expected levels except for No. 2 heavy melting, which advanced \$1.

**Buffalo** — Major purchases are expected later this week. But there is no immediate activity and prices are static. Dealer inventories are in short supply.

**Boston** — Export market has dwindled to practical zero. Domestic market is spotty and quiet. No activity to speak of is looked for in the next two to three weeks.

**West Coast**—The market is quiet and prices of steelmaking grades are steady in San Francisco, Los Angeles and Seattle. One major mill is holding off buying No. 1 heavy melting, probably waiting out a lower price.



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 it's **WIDE...**  
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MicroRold 430 is also available in the regular commercial finishes and MicroRold stainless in other grades are now produced up to 48" wide. Complete details sent on request.

**Washington Steel**  
*Corporation*

8-L

WOODLAND AVENUE

WASHINGTON, PA

# SCRAP PRICES (Effective Aug. 6, 1957)

## Pittsburgh

No. 1 hvy. melting	\$55.00 to \$56.00
No. 2 hvy. melting	48.00 to 49.00
No. 1 dealer bundles	55.00 to 56.00
No. 1 factory bundles	63.00 to 64.00
No. 2 bundles	55.00 to 56.00
No. 1 busheling	55.00 to 56.00
Machine shop turn.	33.00 to 34.00
Mixed bor. and ms. turn.	33.00 to 34.00
Shoveling turnings	37.00 to 38.00
Cast iron borings	37.00 to 38.00
Low phos. punch'gs plate	63.00 to 64.00
Heavy turnings	50.00 to 51.00
No. 1 R.R. hvy. melting	64.00 to 65.00
Scrap rails, random lgth.	72.00 to 73.00
Rails 2 ft. and under	75.00 to 76.00
R.R. steel wheels	71.00 to 72.00
R.R. spring steel	71.00 to 72.00
R.R. couplers and knuckles	71.00 to 72.00
No. 1 machinery cast.	58.00 to 59.00
Cupola cast.	49.00 to 50.00
Heavy breakable cast.	47.00 to 48.00

## Chicago

No. 1 hvy. melting	\$54.00 to \$55.00
No. 2 hvy. melting	48.00 to 49.00
No. 1 dealer bundles	55.00 to 56.00
No. 1 factory bundles	61.00 to 62.00
No. 2 bundles	42.00 to 43.00
No. 1 busheling	51.00 to 52.00
Machine shop turn.	35.00 to 36.00
Mixed bor. and turn.	37.00 to 38.00
Shoveling turnings	37.00 to 38.00
Cast iron borings	37.00 to 38.00
Low phos. forge crops	65.00 to 66.00
Low phos. punch'gs plate	61.00 to 62.00
Low phos. 3 ft. and under	59.00 to 60.00
No. 1 R.R. hvy. melting	61.00 to 62.00
Scrap rails, random lgth.	73.00 to 74.00
Rolling rails	81.00 to 82.00
Rails 2 ft. and under	79.00 to 80.00
Locomotive tires cut	65.00 to 66.00
Cut bolsters & side frames	66.00 to 67.00
Angles and splice bars	69.00 to 70.00
R.R. steel car axles	83.00 to 84.00
R.R. couplers and knuckles	63.00 to 64.00
No. 1 machinery cast.	53.00 to 54.00
Cupola cast.	48.00 to 49.00
Heavy breakable cast.	45.00 to 46.00
Cast iron brake shoe	48.00 to 49.00
Cast iron wheels	54.00 to 55.00
Malleable	62.00 to 63.00
Stove plate	46.00 to 47.00
Steel car wheels	66.00 to 67.00

## Philadelphia Area

No. 1 hvy. melting	\$54.00 to \$55.00
No. 2 hvy. melting	45.00 to 46.00
No. 1 dealer bundles	52.00 to 53.00
No. 2 bundles	42.50 to 43.50
No. 1 busheling	52.00 to 53.00
Machine shop turn.	35.00 to 36.00
Mixed bor. short turn.	36.00 to 37.00
Cast iron borings	36.00 to 37.00
Shoveling turnings	38.00 to 39.00
Clean cast. chem. borings	42.00 to 44.00
Low phos. 5 ft. and under	57.00 to 58.00
Low phos. 2 ft. and under	58.00 to 59.00
Low phos. punch'gs	58.00 to 59.00
Elec. furnace bundles	56.00 to 57.00
Heavy turnings	47.00 to 48.00
R.R. steel wheels	65.00 to 66.00
R.R. spring steel	65.00 to 66.00
Rails 18 in. and under	71.00 to 72.00
Cupola cast.	46.00 to 47.00
Heavy breakable cast.	52.00 to 53.00
Cast iron car wheels	57.00 to 58.00
Malleable	61.00 to 62.00
Unstripped motor blocks	41.00 to 42.00
No. 1 machinery cast.	56.00 to 57.00

## Cleveland

No. 1 hvy. melting	\$53.00 to \$54.00
No. 2 hvy. melting	45.00 to 46.00
No. 1 dealer bundles	53.00 to 54.00
No. 1 factory bundles	57.50 to 58.50
No. 2 bundles	41.00 to 42.00
No. 1 busheling	53.00 to 54.00
Machine shop turn.	26.00 to 27.00
Mixed bor. and turn.	30.00 to 31.00
Shoveling turnings	30.00 to 31.00
Cast iron borings	30.00 to 31.00
Cut struct'l & plates, 2 ft. & under	61.00 to 62.00
Drop forge flashings	53.00 to 54.00
Low phos. punch'gs plate	54.00 to 55.00
Foundry steel, 2 ft. & under	55.00 to 56.00
No. 1 R.R. heavy melting	57.00 to 58.00
Rails 2 ft. and under	73.00 to 74.00
Rails 18 in. and under	74.00 to 75.00
Railroad grate bars	35.00 to 36.00
Steel axle turnings	33.00 to 34.00
Railroad cast.	56.00 to 57.00
No. 1 machinery cast.	55.00 to 56.00
Stove plate	50.00 to 51.00
Malleable	62.00 to 63.00

## Iron and Steel Scrap

Goina prices of iron and steel scrap as obtained in the trade by THE IRON AGE based on representative tonnages. All prices are per gross ton delivered to consumer unless otherwise noted.

## Youngstown

No. 1 hvy. melting	\$56.00 to \$57.00
No. 2 hvy. melting	48.00 to 49.00
No. 1 dealer bundles	56.00 to 57.00
No. 2 bundles	44.00 to 45.00
Machine shop turn.	32.00 to 33.00
Shoveling turnings	36.00 to 37.00
Cast iron borings	36.00 to 37.00
Low phos. plate	58.00 to 59.00

## Buffalo

No. 1 hvy. melting	\$45.00 to \$46.00
No. 2 hvy. melting	39.00 to 40.00
No. 1 busheling	45.00 to 46.00
No. 1 dealer bundles	45.00 to 46.00
No. 2 bundles	35.00 to 36.00
Machine shop turn.	28.00 to 29.00
Mixed bor. and turn.	30.00 to 31.00
Shoveling turnings	34.00 to 35.00
Cast iron borings	31.00 to 32.00
Low phos. plate	52.00 to 53.00
Scrap rails, random lgth.	56.00 to 57.00
Rails 2 ft. and under	66.00 to 67.00
R.R. steel wheels	53.00 to 54.00
R.R. spring steel	49.00 to 50.00
R.R. couplers and knuckles	49.00 to 50.00
No. 1 machinery cast.	52.00 to 53.00
No. 1 cupola cast.	47.00 to 48.00

## Detroit

Brokers buying prices per gross ton, on cars:	
No. 1 hvy. melting	\$50.00 to \$51.00
No. 2 hvy. melting	40.00 to 41.00
No. 1 dealer bundles	50.00 to 51.00
No. 2 bundles	37.00 to 38.00
No. 1 busheling	48.00 to 49.00
Drop forge flashings	47.00 to 48.00
Machine shop turn.	26.00 to 27.00
Mixed bor. and turn.	29.00 to 30.00
Shoveling turnings	29.00 to 30.00
Cast iron borings	29.00 to 30.00
Low phos. punch'gs plate	48.00 to 49.00
No. 1 cupola cast.	48.00 to 49.00
Heavy breakable cast.	44.00 to 45.00
Stove plate	45.00 to 46.00
Automotive cast.	54.00 to 55.00

## St. Louis

No. 1 hvy. melting	\$50.00 to \$51.00
No. 2 hvy. melting	47.00 to 48.00
No. 1 dealer bundles	50.00 to 51.00
No. 2 bundles	42.00 to 43.00
Machine shop turn.	34.00 to 35.00
Cast iron borings	34.00 to 35.00
Shoveling turnings	36.00 to 37.00
No. 1 R.R. hvy. melting	59.00 to 60.00
Rails, random lengths	66.00 to 67.00
Rails 18 in. and under	73.00 to 74.00
Locomotive tires uncut	59.00 to 60.00
Angles and splice bars	62.00 to 63.00
Std. steel car axles	72.00 to 73.00
R.R. specialties	63.00 to 64.00
Cupola cast.	46.00 to 47.00
Heavy breakable cast.	41.00 to 42.00
Cast iron brake shoes	43.00 to 44.00
Stove plate	44.50 to 45.50
Cast iron car wheels	49.00 to 50.00
Rolling rails	77.00 to 78.00
Unstripped motor blocks	40.00 to 41.00

## Boston

Brokers buying prices per gross ton, on cars:	
No. 1 hvy. melting	\$41.00 to \$42.00
No. 2 hvy. melting	34.00 to 35.00
No. 1 dealer bundles	41.00 to 42.00
No. 2 bundles	34.00 to 35.00
No. 1 busheling	41.00 to 42.00
Elec. furnace, 3 ft. & under	46.00 to 47.00
Machine shop turn.	25.00 to 26.00
Mixed bor. and short turn.	27.00 to 28.00
Shoveling turnings	28.00 to 29.00
Clean cast. chem. borings	31.00 to 32.00
No. 1 machinery cast.	40.00 to 41.00
Mixed cupola cast.	33.00 to 34.00
Heavy breakable cast.	42.00 to 43.00
Stove plate	32.00 to 33.00
Unstripped motor blocks	31.00 to 32.00

## New York

Brokers buying prices per gross ton, on cars:	
No. 1 hvy. melting	\$49.00 to \$50.00
No. 2 hvy. melting	42.00 to 43.00
No. 1 dealer bundles	49.00 to 50.00
Machine shop turn.	39.00 to 40.00
Mixed bor. and turn.	28.00 to 29.00
Shoveling turnings	29.00 to 30.00
Clean cast. chem. borings	34.00 to 35.00
No. 1 machinery cast.	46.00 to 47.00
Mixed yard cast.	41.00 to 42.00
Charging box cast.	46.00 to 47.00
Heavy breakable cast.	46.00 to 47.00
Unstripped motor blocks	33.00 to 34.00

## Birmingham

No. 1 hvy. melting	\$49.00 to \$50.00
No. 2 hvy. melting	39.00 to 40.00
No. 1 dealer bundles	49.00 to 50.00
No. 2 bundles	37.00 to 38.00
No. 1 busheling	49.00 to 50.00
Machine shop turn.	39.00 to 40.00
Shoveling turnings	40.00 to 41.00
Cast iron borings	28.00 to 29.00
Electric furnace bundles	51.00 to 52.00
Elec. furnace, 3 ft. & under	49.00 to 50.00
Bar crops and plate	55.00 to 56.00
Structural and plate, 2 ft.	55.00 to 56.00
No. 1 R.R. hvy. melting	55.00 to 56.00
Scrap rails, random lgth.	63.00 to 64.00
Rails, 18 in. and under	69.00 to 70.00
Angles & splice bars	69.00 to 70.00
Rolling rails	77.00 to 78.00
No. 1 cupola cast.	54.00 to 55.00
Stove plate	54.00 to 55.00
Charging box cast.	37.00 to 38.00
Cast iron car wheels	46.00 to 47.00
Unstripped motor blocks	44.00 to 45.00

## Cincinnati

Brokers buying prices per gross ton, on cars:	
No. 1 hvy. melting	\$52.00 to \$53.00
No. 2 hvy. melting	45.00 to 46.00
No. 1 dealer bundles	51.00 to 52.00
No. 2 bundles	43.00 to 44.00
Machine shop turn.	33.00 to 34.00
Mixed bor. and turn.	30.00 to 31.00
Shoveling turnings	36.00 to 37.00
Cast iron borings	30.00 to 31.00
Low phos. 18 in. and under	59.00 to 60.00
Rails, random lengths	64.00 to 65.00
Rails, 18 in. and under	71.00 to 72.00
No. 1 cupola cast.	45.00 to 46.00
Hvy. breakable cast.	43.00 to 44.00
Drop broken cast.	55.00 to 56.00

## San Francisco

No. 1 hvy. melting	\$47.00
No. 2 hvy. melting	44.00
No. 1 dealer bundles	46.00
No. 2 bundles	35.00
Machine shop turn.	32.00
Cast iron borings	32.00 to 33.00
No. 1 R.R. hvy. melting	47.00
No. 1 cupola cast.	55.00

## Los Angeles

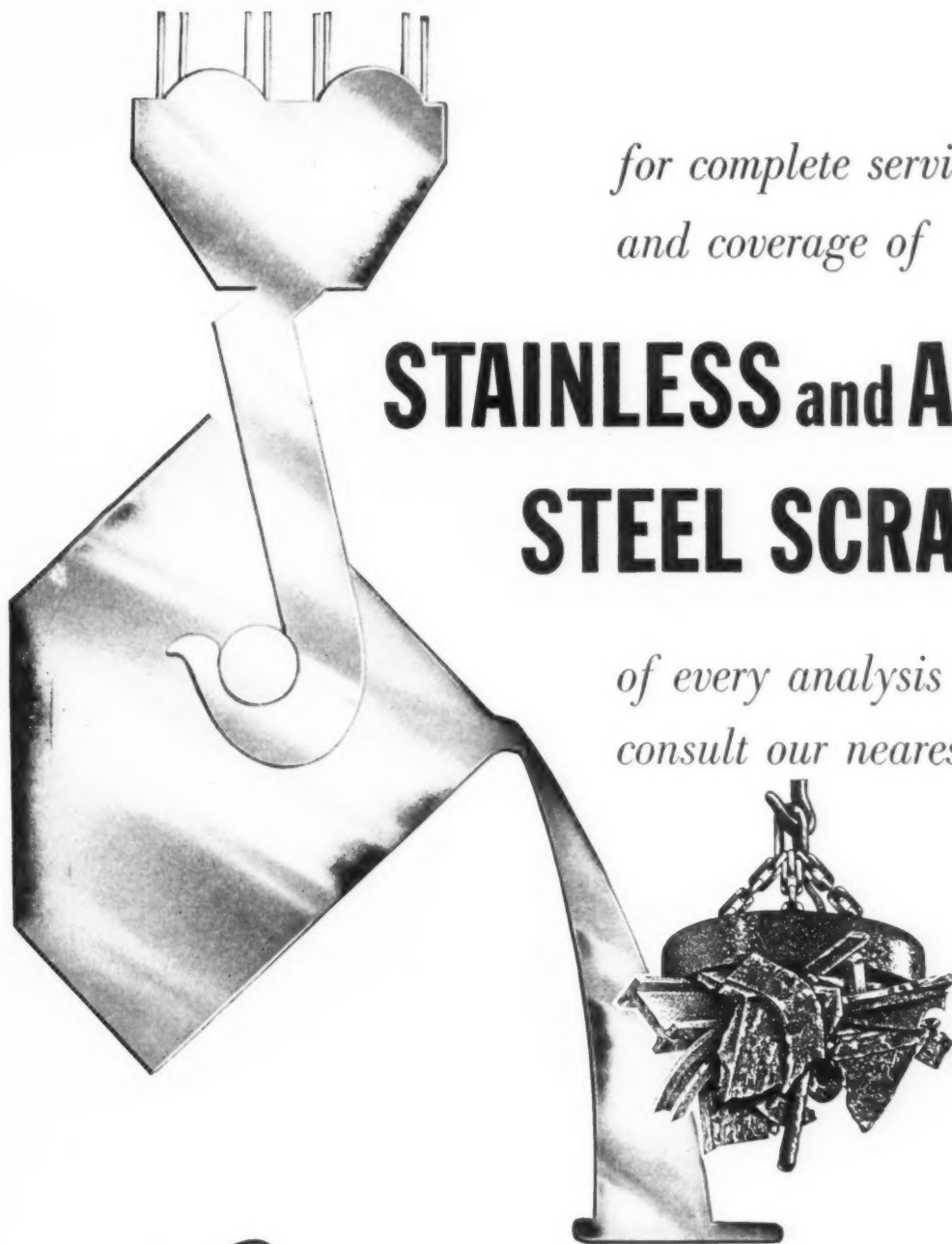
No. 1 hvy. melting	\$47.00
No. 2 hvy. melting	45.00
No. 1 dealer bundles	46.00
No. 2 bundles	35.00
Machine shop turn.	32.00
Shoveling turnings	\$32.00 to 33.00
Cast iron borings	30.00 to 31.00
Elec. furn. 1 ft. and under	
Foundry	58.00
No. 1 R.R. hvy. melting	47.00
No. 1 cupola cast.	52.00

## Seattle

No. 1 hvy. melting	\$47.00
No. 2 hvy. melting	\$43.00 to 45.00
No. 2 bundles	33.00
No. 1 cupola cast.	47.00
Mixed yard cast.	47.00

## Hamilton, Ont.

No. 1 hvy. melting	\$50.00
No. 2 hvy. melting	45.00
No. 1 dealer bundles	50.00
No. 2 bundles	39.00
Mixed steel scrap	42.00
Busheling	36.00
Bush, new fact. prep'd.	50.00
Bush, new fact. unprep'd	44.00
Machine shop turn.	22.00
Short steel turn.	30.00
Mixed bor. and turn.	24.00
Rails, rerolling	56.00
Cast scrap	52.00



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# Alcoa, Kaiser May Sell Less to U.S.

**Alcoa and Kaiser have been unloading surplus output on the government, while importing from Canada.**

**Senator Robertson (D., Va.) lights a fire under talks to end the situation.**

■ The word from Washington is that Aluminum Co. of America, and Kaiser Aluminum & Chemical Corp. are getting down to brass tacks in negotiating a difficult situation with General Services Administration.

Under current contracts, Alcoa and Kaiser must import metal from Canada, but are able to unload some of their own surplus production on GSA.

**Too Much Aluminum**—The government has had to spend \$72 million for 288 million lb of aluminum, more than it knows what to do with. And it could be on the spot for \$340 million more for an additional 1,365 billion lb.

Reports indicate the government and the two companies are near agreement on either of two solutions: (1) Alcoa would deduct an amount equal to 80 pct of its imports from metal eligible to be "put" with the government. Kaiser would deduct 75 pct. (2) Both contracts with the government would be settled now for a specific tonnage.

**Senator Asks Why**—The spotlight was thrown on the situation by Sen. A. Willis Robertson (D., Va.), chairman of the House-Senate Defense Production Committee, who wanted to know why Alcoa and Kaiser were permitted to unload surplus aluminum while im-

porting Canadian metal.

Here's the background:

In 1950 the government wanted to mobilize for the Korean fracas without squeezing the small fabricators. So it signed contracts with Alcoa, Kaiser, and Reynolds Metals Co. agreeing to take the excess of some 613,000 tons of new capacity, provided it was first offered to independent, non-integrated fabricators. The contracts were to last five years from the day each expansion reached 90 pct of capacity. It has just about run out on one plant, will expire for most next year, the rest in 1959.

While demand exceeded supply, the small fabricators were glad to take all the metal offered.

**Producers Buy in Canada**—With new capacity going to independents, the producers' mills needed more metal. In 1953, Alcoa and Kaiser, on their own but with the knowledge of the government, agreed to buy 600,000 tons of aluminum each, over a six year period, from Aluminum Co. of Canada. The Canadian producer was glad to get the contracts since it was about to start up its giant Kitimat project and needed a major market. It insisted on a minimum six year period, and is not likely to change its mind.

As long as demand exceeded supply, the contracts operated together with no difficulty. But late in 1956 the situation changed and the producers began exercising their "put" option to make their books balance.

The aluminum companies involved point out that they have been negotiating with GSA and ODM for some time. Spokesmen admit

that the attack of Senator Robertson is likely to speed up final settlement.

**All Prices Up**—As expected, all of the major aluminum producers followed Alcoa's lead and raised prices 1¢ per lb for primary metal. New Reynolds rates are effective Aug. 1; Kaiser increase for pig, ingot and billet is also effective Aug. 1, and mill products Aug. 3; Aluminium Ltd., which sells only ingot in the U. S., raised its price Aug. 5.

One of the major producers reports there was some hedge buying prior to the increase, which may dampen August sales and shipment levels.

Tin prices for the week: July 31—95.625; Aug. 1—95.25; Aug. 2—95.25; Aug. 5—95.375; Aug. 6—95.375.\*

\* Estimate.

## Monthly Average Metal Prices

(Cents per lb except as noted)  
Average prices of the major nonferrous metals in July based on quotations appearing in THE IRON AGE, were as follows:

Electrolytic copper, del'd	
Conn. Valley	29.25
Copper, Lake	29.25
Straits Tin, New York	96.545
Zinc, E. St. Louis	10.00
Lead, St. Louis	13.80
Aluminum ingot	27.10

Note: Quotations are going prices.

## Primary Prices

(cents per lb)	Current price	last price	date of change
Aluminum ingot	28.10	27.10	8.1.57
Aluminum pig	26.00	25.00	8.1.57
Copper E	29.25	32.00	6.19.57
Copper CS	28.25	28.50	7.22.57
Copper L	29.25	32.00	6.19.57
Lead, St. L.	13.80	14.80	6.11.57
Lead, N. Y.	14.00	15.50	6.11.57
Magnesium ingot	36.00	34.09	8.13.56
Magnesium pig	35.25	33.75	8.13.56
Nickel	74.00	64.50	12.6.56
Titanium sponge	200-250	250-275	6.6.57
Zinc, E. St. L.	10.00	10.50	7.1.57
Zinc, N. Y.	10.50	11.00	7.1.57

**ALUMINUM:** 99% ingot frt allwd. **COPPER:** (E) = electrolytic, (CS) = custom smelters, electrolytic. (L) = lake. **LEAD:** common grade. **MAGNESIUM:** 99.8% pig-Velasco, Tex. **NICKEL:** Port Colbourne, Canada. **ZINC:** prime western. **TIN:** see above; other primary prices, pg. 134.



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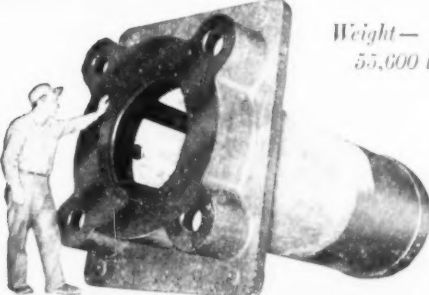
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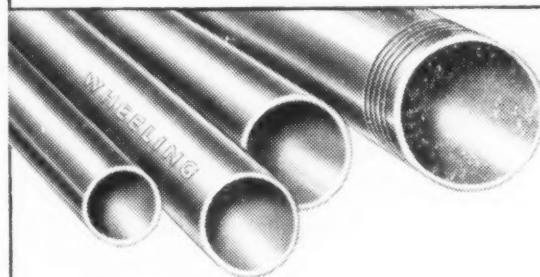
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# NONFERROUS PRICES (Effective Aug. 6, 1957)

## MILL PRODUCTS

(Cents per lb unless otherwise noted)

### ALUMINUM

(Base 30,000 lb, f.o.b. ship. pt., frt. allowed)

#### Flat Sheet (Mill Finish) and Plate

(1/2" temper except 6061-0)

Alloy	032	081	136	250
1100, 3003	46.6	44.3	43.6	42.7
5052	54.0	48.9	47.2	45.4
6061-0	51.4	47.0	45.2	43.1

#### Extruded Solid Shapes

Factor	6063 T-5	6062 T-6
6 x 8	45.0-46.8	60.4-64.1
12-14	45.7-47.2	61.3-65.8
24-26	49.0-49.5	72.1-76.8
30-38	58.0-58.6	96.2-99.8

#### Screw Machine Stock—2011-T-3

Size	3/4	3/8-3/4	3/4-1	1 1/4-1 1/2
Price	63.0	62.5	61.0	58.6

#### Roofing Sheet, Corrugated

(Per sheet, 26" wide base, 16,000 lb)

Length	72	96	120	144
019 gage	\$1.420	\$1.893	\$2.367	\$2.839
024 gage	1.774	2.366	2.957	3.549

## MAGNESIUM

(F.o.b. shipping Pt., carload frt. allowed)

#### Sheet and Plate

Type	Gage	250	250	188	081	032
AZ91P Stand. Grade		67.9	69.0	77.9	108.1	
AZ91P Spec.		93.3	95.7	108.7	171.3	
Tread Plate		70.6	71.7			
Tooling Plate		73.0				

#### Extruded Shapes

Factor	6 x 8	12-14	24-26	36-38
Comm. Grade (AZ91P)	69.6	70.7	75.6	89.2
Spec. Grade (AZ91P)	84.6	85.7	90.6	104.2

#### Alloy Ingot

AZ91P (Die Casting) 37.25 (delivered)  
AZ91A, AZ91B, AZ91C (Sand Casting) 40.75 (Avelco, Tex.)

## NICKEL, MONEL, INCONEL

(Base prices, f.o.b. mill)

"A" Nickel	Monel	Inconel
Sheet, CR	126	106
Strip, CR	124	108
Rod, bar, HR	107	89
Angles, HR	107	89
Plates, HR	129	105
Seamless tube	157	129
Shot, blocks		87

## COPPER, BRASS, BRONZE

(Fright included on 5000 lbs)

	Sheet	Wire	Rod	Tube
Copper	51.38		48.61	51.57
Brass, 70-30	41.69	45.23	46.63	47.90
Brass, Low	47.40	47.94	47.34	50.21
Brass, R L	48.36	48.90	48.30	51.17
Brass, Naval	48.85		43.16	52.26
Muntz Metal	46.94		42.75	
Comm. Br.	49.86	50.40	49.80	52.42
Mang. Br.	52.29		46.69	
Phos. Br. 5%	70.47		70.97	

Free Cutting Brass Rod ..... 32.87

## TITANIUM

(10,000 lb base, f.o.b. mill)

Sheet and strip, commercially pure, \$9.50-\$19.69; alloy, \$14.75; Plate, HR, commercially pure, \$8.00-\$8.75; alloy, \$10.75. Wire, rolled and/or drawn, commercially pure, \$7.50-\$8.00; alloy, \$19.00; Bar, HR or forged, commercially pure, \$6.15-\$6.49; alloy, \$6.15-\$6.35; billets, HR, commercially pure, \$6.00-\$6.25; alloy, \$6.00-\$6.20.

## PRIMARY METAL

(Cents per lb, unless otherwise noted)

Antimony, American, Laredo, Tex., 33.50  
Beryllium aluminum 5% Be, Dollar  
per lb contained Be, \$74.75  
Beryllium copper, per lb contained Be, \$43.00  
Beryllium 97% lump or beads,  
f.o.b. Cleveland, Reading, \$71.50  
Bismuth, ton lots, 8.25  
Cadmium, del'd, 1.70  
Calcium, 99.9%, small lots, 8.45  
Chromium, 99.8% metallic basis, 1.31  
Cobalt, 97-99% (per lb), \$2.00 to \$2.07  
Germanium, per gm, f.o.b. Miami,  
Okla., refined, \$39.50-\$53.50  
Gold, U. S. Treas., per troy oz., \$35.00  
Indium, 99.9%, dollars per troy oz., 8.25  
Iridium, dollars per troy oz., \$86 to \$89  
Lithium, 98%, \$11.00 to \$14.00  
Magnesium, sticks, 100 to 500 lb., 59.00  
Mercury, dollars per 76-lb flask,  
f.o.b. New York, \$252 to \$255  
Nickel oxide sinter at Copper  
Cliff, out, contained nickel, 71.25  
Palladium, dollars per troy oz., \$23 to \$24  
Platinum, dollars per troy oz., \$84 to \$87  
Rhodium, \$120.00 to \$125.00  
Silver ingots (6 per troy oz.), 90.875  
Thorium, per kg., \$43.00  
Uranium, normal per kg., \$39.00  
Vanadium, 99.9%, 3.45  
Zirconium sponge, \$10.00

## REMELTED METALS

### Brass Ingot

(Cents per lb delivered, carloads)

85-5-5 ingot  
No. 115 29.50  
No. 120 28.50  
No. 123 27.00  
80-10-10 ingot  
No. 305 33.50  
No. 315 31.50  
88-10-2 ingot  
No. 219 41.25  
No. 215 37.50  
No. 245 33.50  
Yellow ingot  
No. 405 24.00  
Manganese bronze  
No. 421 27.00

### Aluminum Ingot

(Cents per lb del'd 30,000 lb and over)

95-5 aluminum-silicon alloys  
0.30 copper max., 26.25-27.00  
0.60 copper max., 26.00-26.50  
Piston alloys (No. 122 type), 24.25-25.00  
No. 12 atom. (No. 2 grade), 23.75-25.50  
108 alloy, 23.25-24.00  
195 alloy, 25.75-26.75  
13 alloy (0.60 copper max.), 26.00-26.50  
AN8-679 23.25-24.00

## Steel deoxidizing aluminum, notch bar granulated or shot

Grade 1—95-97 1/2% 24.50-25.50  
Grade 2—92-95% 22.75-23.50  
Grade 3—90-92% 21.75-22.50  
Grade 4—85-90% 20.75-21.50

## SCRAP METALS

### Brass Mill Scrap

(Cents per pound, add 1¢ per lb for shipments of 20,000 lb and over)

	Heavy	Turnings
Copper	25 1/2	24 1/2
Yellow brass	19 1/2	17 1/2
Red brass	22 1/2	21 1/2
Comm. bronze	23 1/2	22 1/2
Mang. bronze	17 1/2	16 1/2
Yellow brass rod ends	18 1/2	

### Customs Smelters Scrap

(Cents per pound carload lots, delivered to refinery)

No. 1 copper wire 24 1/2  
No. 2 copper wire 22 1/2  
Light copper 20 1/2  
\*Refinery brass 22 1/2  
Copper bearing material 21 1/2  
\*Dry copper content.

### Ingot Makers Scrap

(Cents per pound carload lots, delivered to refinery)

No. 1 copper wire 24 1/2  
No. 2 copper wire 22 1/2  
Light copper 20 1/2  
No. 1 composition 22 1/2  
No. 1 comp. turnings 21 1/2  
Hvy. yellow brass solids 16  
Brass pipe 18 1/2  
Radiators 17

Mixed old cast 14 1/2-15  
Mixed new clips 17-17 1/2  
Mixed turnings, dry 15-16

### Dealers' Scrap

(Dealers' buying price f.o.b. New York in cents per pound)

### Copper and Brass

No. 1 copper wire 21-24 1/2  
No. 2 copper wire 19 1/2-20  
Light Copper 17 1/2-18  
Auto radiators (unsweated) 13 1/2-14  
No. 1 composition 18 1/2-19  
No. 1 composition turnings 18-18 1/2  
Cocks and faucets 14 1/2-15  
Clean heavy yellow brass 12 1/2-13  
Brass pipe 15 1/2-16  
New soft brass clippings 17-17 1/2  
No. 1 brass rod turnings 14 1/2-14 3/4

### Aluminum

Alum. pistons and struts 5 1/2-6  
Aluminum crankcases 11-11 1/2  
1100 (28) aluminum clippings 14-14 1/2  
Old sheet and utensils 11-11 1/2  
Borings and turnings 7-7 1/2  
Industrial castings 11-11 1/2  
2024 (248) clippings 12 1/2-13

### Zinc

New zinc clippings 4-4 1/2  
Old zinc 3-3 1/2  
Zinc routings 1 1/2-2  
Old die cast scrap 1 1/2-1 3/4

### Nickel and Monel

Pure nickel clippings 85-90  
Clean nickel turnings 70-75  
Nickel anodes 85-90  
Nickel rod ends 45-48  
New Monel clippings 45-48  
Clean Monel turnings 35-40  
Old sheet Monel 44-45  
Nickel silver clippings, mixed, 21  
Nickel silver turnings, mixed, 18

### Lead

Soft scrap lead 9 1/2-10  
Battery plates (dry) 4 1/2-4 3/4  
Batteries, acid free 2 1/4-3

### Miscellaneous

Block tin 75-76  
No. 1 pewter 59-60  
Auto babbitt 39-40  
Mixed common babbitt 11-11 1/2  
Solder joints 15 1/2-16  
Siphon tops 42  
Small foundry type 13-13 1/4  
Monotype 12-12 1/4  
Lino. and stereotype 12-12 1/4  
Electrotype 11-11 1/4  
Hand picked type shells 8-8 1/2  
Lino. and stereo. dross 3 1/2-4  
Electro. dross 3-3 1/4

IRON AGE		Italics identify producers listed in key at end of table. Base prices, f.o.b. mill, in cents per lb., unless otherwise noted. Extras apply.												
STEEL PRICES <i>(Effective Aug. 6, 1957)</i>		BILLETS, BLOOMS, SLABS			PIL-ING	SHAPES STRUCTURALS			STRIP					
		Carbon Re-rolling Net Ton	Carbon Forging Net Ton	Alloy Net Ton		Carbon	Hi Str. Low Alloy	Carbon Wide-Flange	Hot-rolled	Cold-rolled	Hi Str. H.R. Low Alloy	Hi Str. C.R. Low Alloy	Alloy Hot-rolled	Alloy Cold-rolled
EAST	Behlehem, Pa.			\$114.00 B3		5.325 B3	7.80 B3	5.325 B3						
	Buffalo, N. Y.	\$77.50 R3, B3	\$96.00 R3, B3	\$114.00 R3, B3	6.225 B3	5.325 B3	7.80 B3	5.325 B3	4.925 R3, B3	7.15 R7	7.325 B3			
	Phila., Pa.									7.70 P15				
	Harrison, N. J.													15.05 C11
	Conshohocken, Pa.		\$101.00 A2	\$121.00 A2					4.975 A2	7.20 A2	7.325 A2			
	New Bedford, Mass.									7.60 R6				
	Johnstown, Pa.	\$77.50 B3	\$96.00 B3	\$114.00 B3		5.325 B3	7.80 B3							
	Boston, Mass.									7.70 T8				15.40 T8
	New Haven, Conn.									7.60 D1				
	Baltimore, Md.									7.15 T8				15.05 T8
	Phoenixville, Pa.					5.50 P2		5.50 P2						
	Sparrows Pt., Md.								4.925 B3		7.325 B3			
MIDDLE WEST	Bridgeport, Wallingford, Conn.	80.50 N8	\$101.00 N8	\$114.00 N8						7.60 W1				
	Pawtucket, R. I. Worcester, Mass.									7.70 N7 7.70 A5				15.40 N7 15.20 T8
	Alton, Ill.								5.125 L1					
	Ashland, Ky.								4.925 A7					
	Canton-Massillon, Dover Ohio		\$96.00 R3	\$114.00 R3, T5						7.15 G4		10.40 G4		14.85 C11
	Chicago, Ill. Franklin Park, Ill. Evanston, Ill.	\$77.50 U1, R3	\$96.00 U1, R3, W8	\$114.00 U1, R3, W8	6.225 U1	5.275 U1, W8, P13	7.75 U1, Y1 6.525 W8	5.275 U1	4.925 W8, N4, A1	7.25 A1, T8, M8			8.10 W8, S9, I3	14.85 A1, S9, 15.05 G4
	Cleveland, Ohio									7.15 A5, J3			8.10 J3	
	Detroit, Mich.			\$114.00 R5					5.025 G3, M2	7.25 M2, D1, D2, G3, P11	7.425 G3	10.60 G3, D2	8.10 G3	
	Anderson, Ind.									7.15 G4		10.40 G4		
	Duluth, Minn.													
	Gary, Ind. Harbor, Indiana	\$77.50 U1	\$96.00 U1	\$114.00 U1, Y1	6.225 I3	5.275 U1	7.75 U1, I3	5.25 I3	4.925 U1, I3, Y1	7.15 Y1	7.325 U1, I3, Y1	10.50 Y1	8.10 U1, Y1	
	Sterling, Ill.	\$77.50 N4				5.275 N4			5.025 N4					
WEST	Indianapolis, Ind.									7.30 C5				
	Newport, Ky.												8.10 A9	
	Middletown, Ohio													
	Niles, Warren, Ohio Sharon, Pa.		\$96.00 S1, C10	\$114.00 C10, S1					4.925 R3, S1	7.15 R3, T4, S1	7.325 R3, S1	10.30 S1, R3	8.10 S1	15.05 S1
	Pittsburgh, Pa. Midland, Pa. Butler, Pa. Aliquippa, Pa.	\$77.50 U1, P6	\$96.00 U1, C11, P6	\$114.00 U1, C11	6.225 U1	5.275 U1, J3	7.75 U1, J3	5.275 U1	4.925 P6	7.15 J3, B4, S7			8.10 S9	15.05 S9
	Portsmouth, Ohio													
	Weirton, Wheeling, Follansbee, W. Va.					5.275 W3			4.925 W3	7.15 W3, F3	7.325 W3	10.45 W3		
	Youngstown, Ohio	\$77.50 R3	\$96.00 Y1, C10	\$114.00 Y1		5.425 Y1	7.75 Y1			7.15 R3, Y1, C5	7.325 U1, Y1	10.50 Y1	8.10 U1, Y1	
	Fontana, Cal.	\$88.00 K1	\$105.50 K1	\$135.00 K1		6.025 K1	8.50 K1	6.225 K1	5.775 K1	9.00 K1				
	Geneva, Utah		\$96.00 C7			5.275 C7	7.75 C7							
	Kansas City, Mo.					5.375 S2	7.85 S2		5.175 S2		7.575 S2		8.35 S2	
	SOUTH	Los Angeles, Torrance, Cal.		\$105.50 B2	\$134.00 B2		5.975 C7, B2	8.45 B2		5.675 C7, B2				9.30 B2
Minnequa, Colo.						5.575 C6			6.025 C6	9.10 K1				
Portland, Ore.						6.025 O2								
San Francisco, Niles, Pittsburg, Cal.			\$105.50 B2			5.925 B2	8.40 B2		5.675 C7, B2					
Seattle, Wash.			\$109.50 B2			6.025 B2	8.50 B2		5.925 B2					
Atlanta, Ga.						5.475 A8			5.125 A8					
SOUTH	Fairfield, Ala. City, Birmingham, Ala.	\$77.50 T2	\$96.00 T2			5.275 T2, R3, C16	7.75 T2		4.925 T2, R3, C16 5.225 C10		7.325 T2			
	Houston, Lone Star, Texas		\$101.00 S2	\$119.00 S2		5.375 S2	7.85 S2		5.175 S2		7.575 S2		8.35 S2	

## IRON AGE

Italics identify producers listed in key at end of table. Base prices, f.o.b. mill, in cents per lb., unless otherwise noted. Extras apply.

STEEL  
PRICES(Effective  
Aug. 6, 1957)

	SHEETS									WIRE ROD	TINPLATE†		BLACK PLATE
	Hot-rolled 18 ga. & heavier	Cold- rolled	Galvanized	Enamel- ing	Long Terns	Hi Str. Low Alloy H.R.	Hi Str. Low Alloy C.R.	Hi Str. Low Alloy Galv	Hot- rolled 19 ga.		Cokes* 1 25 lb. base box	Electro* 0.25 lb. base box	Holloware Enameling 29 ga.
EAST	Bethlehem, Pa.												
	Buffalo, N. Y.	4.925 B3	6.05 B1			7.275 B3	8.975 B3			6.15 W6	† Special coated mfg. terne deduct 50¢ from 1.25-lb. coke base box price. Can-making quality blackplate 55 to 128 lb. deduct \$2.20 from 1.25 lb. coke base box. * COKES: 1.50-lb. add 25¢. ELECTRO: 0.50-lb. add 25¢; 0.75-lb. add 65¢; 1.00-lb. add \$1.00. Differ- ential 1.80 lb. 0.25 lb. add 65¢.		
	Claymont, Del.												
	Coatesville, Pa.												
	Conshohocken, Pa.	4.975 A2	6.10 A2			7.325 A2							
	Harrisburg, Pa.												
	Hartford, Conn.												
	Johnstown, Pa.									6.15 B3			
	Fairless, Pa.	4.975 U1	6.10 U1			7.325 U1	9.025 U1				\$10.15 U1	\$8.95 U1	
	New Haven, Conn.												
	Phoenixville, Pa.												
	Sparrows Pt., Md.	4.925 B3	6.05 B1	6.60 B3		7.275 B3	8.975 B3	9.725 B3		6.25 B3	\$10.15 B3	\$5.85 B3	
MIDDLE WEST	Worcester, Mass.									6.45 A5			
	Trenton, N. J.												
	Alton, Ill.									6.35 L1			
	Ashtabula, Ky.	4.925 A7		6.60 A7	6.625 A7								
	Canton-Massillon, Dover, Ohio			6.60 R3, R1									
	Chicago, Joliet, Ill.	4.925 W8, A1				7.275 U1				6.15 A5, R3, W8, N4, K2			
	Sterling, Ill.									6.25 N4, K2			
	Cleveland, Ohio	4.925 R3, J3	6.05 R3, J3		6.625 R3	7.275 R3, J3	8.975 R3, J3			6.15 A5			
	Detroit, Mich.	5.025 G3, M2	6.15 G3, 6.05 M2			7.375 G2	9.075 G3						
	Newport, Ky.	4.925 A1	6.05 A1										
	Gary, Ind. Harbor, Indiana	4.925 U1, I3, Y1	6.05 U1, I3, Y1	6.60 U1, I3	6.625 U1, I3, Y1	7.00 U1	7.275 U1, Y1, I3	8.975 U1, Y1		6.15 Y1	\$10.05 U1, Y1	\$8.75 I3, U1, Y1	7.50 U1, Y1
WEST	Granite City, Ill.	5.125 G2	6.25 G2	6.80 G2	6.825 G2							\$8.85 G2	7.60 G2
	Kokomo, Ind.			6.70 C9						6.25 C9			
	Mansfield, Ohio		6.05 E2			7.00 E2							
	Middletown, Ohio		6.05 A7	6.60 A7	6.625 A7	7.00 A7							
	Niles, Warren, Ohio Sharon, Pa.	4.925 R3, N3, S1	6.05 R3	6.60 R3	6.625 N3, S1	7.00 N3, S1	7.275 R3	8.975 S1, R3				\$8.75 R3	
	Pittsburgh, Pa. Midland, Pa. Butler, Pa. Donora, Pa. Aliquippa, Pa.	4.925 U1, J3, P6	6.05 U1, J3, P6	6.60 U1, J3	6.625 U1	7.275 U1, R3, J3	8.975 U1, J3	9.725 U1		6.15 A5, J3, P6	\$10.05 U1, J3	\$8.75 U1, J3	7.50 U1, J3
	Portsmouth, Ohio	4.925 P7	6.05 P7							6.15 P7			
	Weirton, Wheeling, Follansbee, W. Va.	4.925 W3, W3	6.05 W3, F3, W3	6.60 W3, W3		7.00 W3, W3	7.275 W3	8.975 W3			\$10.05 W3, W3	\$8.75 W3, W3	7.50 W3
	Youngstown, Ohio	4.925 U1, Y1	6.05 Y1		6.625 Y1		7.275 Y1	8.975 Y1		6.15 Y1			
	Fontana, Cal.	5.775 K1	7.30 K1			8.125 K1	10.275 K1				\$10.80 K1	\$9.50 K1	
	Geneva, Utah	5.025 C7											
SOUTH	Kansas City, Mo.									6.40 S2			
	Los Angeles, Torrance, Cal.									6.95 B2			
	Minneapolis, Colo.									6.40 C6			
	San Francisco, Niles, Pittsburg, Cal.	5.625 C7	7.00 C7	7.35 C7						6.95 C7	\$10.80 C7	\$9.50 C7	
	Seattle, Wash.												
	Atlanta, Ga.												
SOUTH	Fairfield, Ala. Alabama City, Ala.	4.925 T2, R3	6.05 T2	6.60 T2, R3						6.15 T2, R3	\$10.15 T2	\$8.85 T2	
	Houston, Tex.									6.40 S2			



## IRON AGE

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## STEEL PRICES

(Effective Aug. 6, 1957)

		BARS						PLATES				WIRE
		Carbon Steel	Reinforcing	Cold Finished	Alloy Hot rolled	Alloy Cold Drawn	Hi Str. H.R. Low Alloy	Carbon Steel	Floor Plate	Alloy	Hi Str. Low Alloy	
EAST	Bethlehem, Pa.				6.475 B3	8.775 B3	7.925 B3					
	Buffalo, N. Y.	5.425 R3,B3	5.425 R3,B3	7.30 R3,7.35 B3	6.475 B3,R3	8.775 B3,B5	7.925 B3	5.10 B3		7.20 B2	7.625 B2	7.65 W6
	Claymont, Del.							5.70 P2		7.20 C4	7.625 C4	
	Coatesville, Pa.							5.50 L4		7.20 L4	7.55 L4	
	Conshohocken, Pa.							5.20 A2	6.175 A2	7.20 A2	7.625 A2	
	Harrisburg, Pa.							5.80 P2	6.275 P2			
	Milton, Pa.	5.575 M7	5.575 M7									
	Hartford, Conn.			7.90 R3		9.075 R3	7.925 B3					
	Johnstown, Pa.	5.425 B3	5.425 B3		6.475 B3			5.10 B3		7.20 B3	7.625 B3	7.65 B3
	Fairless, Pa.	5.575 U1	5.575 U1		6.625 U1							
	Newark, N. J.			7.75 W10 7.75 P10		8.95 W10 8.95 P10						
	Bridgeport, Conn.	5.650 N8	5.650 N8	7.65 N8 7.85 W10 7.80 J3	6.550 N8	8.925 N8						
	Putnam, Conn.											
	Willimantic, Conn.											
MIDDLE WEST	Sparrows Pt., Md.		5.425 B3					5.10 B3		7.20 B3	7.625 B3	7.75 B3
	Palmer, Worcester, Roadville, Mass.			7.85 B5,C14		9.075 A5,B5						7.95 A5, W6
	Mansfield, Mass.											
	Spring City, Pa.			7.75 K4		8.950 K4						
	Alton, Ill.	5.625 L1										7.85 L1
	Ashland, Newport, Ky.							5.10 A7,A1		7.20 A1		
	Canton, Massillon, Ohio			7.30 R3,R2	6.475 R3,T5	8.775 R3,R2,T5						
	Chicago, Joliet, Waukegan, Ill.	5.425 U1,R3, W8,N4,P13	5.425 U1,R3, N4,P13	7.30 A5, W10,W8, B5,L2,N9	6.475 U1,R3, W8	8.775 A5, W10,W8, L2,N9,B5	7.925 U1, 6.675 W8	5.10 U1,A1, W8,I3	6.175 U1	7.20 U1,W8	7.625 U1, 7.40 W8	7.65 A5,R3, W8,N4, K2,W7
	Harvey, Ill.											
	Cleveland, Ohio	5.425 R3	5.425 R3	7.30 A5,C13		8.775 A5, C13	7.925 R3	5.20 R3,J3	6.175 J3		7.625 R3, J3	7.65 A5, C13
	Detroit, Mich.	5.525 G3	5.775 G3	7.55 P3 7.50 P8,B5	6.475 R5 6.575 G3	8.775 R5 8.975 B5,P3, P8	8.025 G3	5.20 G3		7.35 G3		
	Duluth, Minn.											7.65 A3
	Gary, Ind. Harbor, Crawfordsville Hammond, Ind.	5.425 U1,I3, Y1	5.425 U1,I3, Y1	7.30 R3,M5, J3	6.475 U1,I3, Y1	8.775 R3,M4	7.925 U1,I3, Y1	5.10 U1,I3, Y1	6.175 J3,I3	7.20 U1,Y1	7.625 U1, Y1	7.75 M4
	Granite City, Ill.							5.30 C2				
WEST	Kekomo, Ind.											7.75 C9
	Sterling, Ill.	5.525 N4	5.525 N4					5.10 N4				7.75 K2
	Niles, Warren, Ohio Sharon, Pa.			7.30 C10	6.475 C10,S1	8.775 C10	7.925 S1	5.10 R3,S1		7.20 S1	7.625 R3, S1	
	Pittsburgh, Midland, Donora, Aliquippa, Pa.	5.425 U1,J3	5.425 U1,J3	7.30 A5,B4, R3,J3,C11, W10,S9,C8	6.475 U1,J3, C11	8.775 A5, W10,R3,S9, C11,C8	7.925 U1,J3	5.10 U1,J3	6.175 U1	7.20 U1,J3	7.625 U1,J3	7.65 A5, J3,P6
	Portsmouth, Ohio											7.65 P7
	Weirton, Wheeling, Follansbee, W. Va.							5.10 W5				
	Youngstown, Ohio	5.425 U1,R3, Y1	5.425 U1,R3, Y1	7.30 A5,Y1, F2	6.475 U1,Y1	8.775 Y1,F2	7.925 U1,Y1	5.10 U1,R3, Y1		7.20 Y1	7.625 U1, R3,Y1	7.65 Y1
	Emeryville, Cal.	6.175 J5	6.175 J5									
	Fontana, Cal.	6.125 K1	6.125 K1		7.525 K1		8.625 K1	5.85 K1		7.95 K1	8.375 K1	
	Geneva, Utah							5.10 C7			7.625 C7	
	Kansas City, Mo.	5.675 S2	5.675 S2		6.725 S2		8.175 S2					7.90 S2
	Los Angeles, Torrance, Cal.	6.125 C7,B2	6.125 C7,B2	8.75 R3,P14	7.525 B2	10.65 P14	8.625 B2					8.66 B2
	Minnequa, Colo.	5.875 C6	5.875 C6					5.95 C6				7.90 C6
SOUTH	Portland, Ore.	6.175 O2	6.175 O2									
	San Francisco, Niles, Pittsburg, Cal.	6.125 C7 6.175 B2	6.125 C7 6.175 B2				8.675 B2					8.60 C7,C6
	Seattle, Wash.	6.175 B2,N6	6.175 B2				3.675 B2	6.00 B2		8.10 B2	8.525 B2	
	Atlanta, Ga.	5.625 A8	5.625 A8									7.85 A8
	Fairfield, Ala. City, Birmingham, Ala.	5.425 T2,R3 C16	5.425 T2,R3, C16	7.90 C16		8.775 R3	7.925 T2	5.10 T2,R3			7.625 T2	7.65 T2,R3
	Houston, Ft. Worth, Lone Star, Tex.	5.675 S2	5.675 S2		6.725 S2		8.175 S2	5.20 S2 5.45 L3		7.30 S2	7.725 S2	7.90 S2

† Merchant Quality—Special Quality .35¢ higher.

# STEEL PRICES (Effective Aug. 6, 1957)

## Key to Steel Producers

### With Principal Offices

A1 Acme Steel Co., Chicago  
A2 Alan Wood Steel Co., Conahocken, Pa.  
A3 Allegheny Ludlum Steel Corp., Pittsburgh  
A4 American Cladmetals Co., Carnegie, Pa.  
A5 American Steel & Wire Div., Cleveland  
A6 Angel Nail & Chaplet Co., Cleveland  
A7 Armco Steel Corp., Middletown, Ohio  
A8 Atlantic Steel Co., Atlanta, Ga.  
A9 Acme Newport Steel Co., Newport, Ky.

B1 Babcock & Wilcox Tube Div., Beaver Falls, Pa.  
B2 Bethlehem Pacific Coast Steel Corp., San Francisco  
B3 Bethlehem Steel Co., Bethlehem, Pa.  
B4 Blair Strip Steel Co., New Castle, Pa.  
B5 Bliss & Laughlin, Inc., Harvey, Ill.  
B6 Brook Plant, Wickwire Spencer Steel Div., Hardsboro, Pa.

C1 Calatrail Steel Corp., Los Angeles  
C2 Carpenter Steel Co., Reading, Pa.  
C3 Central Iron & Steel Co., Harrisburg, Pa.  
C4 Claymont Products Dept., Claymont, Del.  
C5 Cold Metals Products Co., Youngstown, O.  
C6 Colorado Fuel & Iron Corp., Denver  
C7 Columbia Geneva Steel Div., San Francisco  
C8 Columbia Steel & Shafting Co., Pittsburgh  
C9 Continental Steel Corp., Kokomo, Ind.  
C10 Copperweld Steel Co., Pittsburgh, Pa.  
C11 Crucible Steel Co. of America, Pittsburgh  
C12 Cumberland Steel Co., Cumberland, Md.  
C13 Cuyahoga Steel & Wire Co., Cleveland  
C14 Compressed Steel Shafting Co., Readville, Mass.  
C15 G. O. Carlson, Inc., Thorndale, Pa.  
C16 Connors Steel Div., Birmingham  
C17 Chester Blast Furnace, Inc., Chester, Pa.

D1 Detroit Steel Corp., Detroit  
D2 Dearborn Div., Sharon Steel Corp.  
D3 Driver Harris Co., Harrison, N. J.  
D4 Dickson Weatherproof Nail Co., Evanston, Ill.

E1 Eastern Stainless Steel Co., Baltimore  
E2 Empire Steel Co., Mansfield, O.

F1 Firth Sterling, Inc., McKeesport, Pa.  
F2 Fitzsimons Steel Corp., Youngstown  
F3 Follansbee Steel Corp., Follansbee, W. Va.

G2 Granite City Steel Co., Granite City, Ill.  
G3 Great Lakes Steel Corp., Detroit  
G4 Greer Steel Co., Dover, O.

H1 Hanna Furnace Corp., Detroit  
H2 Ingersoll Steel Div., Chicago  
H3 Inland Steel Co., Chicago  
H4 Interlake Iron Corp., Cleveland

J1 Jackson Iron & Steel Co., Jackson, O.  
J2 Jessop Steel Corp., Washington, Pa.  
J3 Jones & Laughlin Steel Corp., Pittsburgh  
J4 Joslyn Mfg. & Supply Co., Chicago  
J5 Judson Steel Corp., Emeryville, Calif.

K1 Kaiser Steel Corp., Fontana, Cal.  
K2 Keystone Steel & Wire Co., Peoria  
K3 Koppers Co., Granite City, Ill.  
K4 Keystone Drawn Steel Co., Spring City, Pa.

L1 Laclede Steel Co., St. Louis  
L2 La Salle Steel Co., Chicago  
L3 Lone Star Steel Co., Dallas  
L4 Lukens Steel Co., Coatesville, Pa.

M1 Mahoning Valley Steel Co., Niles, O.  
M2 McLouth Steel Corp., Detroit  
M3 Mercer Tube & Mfg. Co., Sharon, Pa.  
M4 Mid States Steel & Wire Co., Crawfordsville, Ind.  
M5 Monarch Steel Div., Hammond, Ind.  
M6 Mystic Iron Works, Everett, Mass.  
M7 Milton Steel Products Div., Milton, Pa.  
M8 Mill Strip Products Co., Evanston, Ill.

N1 National Supply Co., Pittsburgh  
N2 National Tube Div., Pittsburgh  
N3 Niles Rolling Mill Div., Niles, O.  
N4 Northwestern Steel & Wire Co., Sterling, Ill.  
N6 Northwest Steel Rolling Mills, Seattle  
N7 Newman Crosby Steel Co., Pawtucket, R. I.  
N8 Northeastern Steel Corp., Bridgeport, Conn.  
N9 Nelson Steel & Wire Co.

O1 Oliver Iron & Steel Co., Pittsburgh  
O2 Oregon Steel Mills, Portland

P1 Page Steel & Wire Div., Monessen, Pa.  
P2 Phoenix Iron & Steel Co., Phoenixville, Pa.  
P3 Pilgrim Drawn Steel Div., Plymouth, Mich.  
P4 Pittsburgh Coke & Chemical Co., Pittsburgh  
P5 Pittsburgh Screw & Bolt Co., Pittsburgh  
P6 Pittsburgh Steel Co., Pittsburgh  
P7 Portsmouth Div., Detroit Steel Corp., Detroit

P8 Plymouth Steel Co., Detroit  
P9 Pacific States Steel Co., Niles, Cal.  
P10 Precision Drawn Steel Co., Camden, N. J.  
P11 Production Steel Strip Corp., Detroit  
P13 Phoenix Mfg. Co., Joliet, Ill.  
P14 Pacific Tube Co.  
P15 Philadelphia Steel and Wire Corp.

R1 Reeves Steel & Mfg. Co., Dover, O.  
R2 Reliance Div., Eaton Mfg. Co., Massillon, O.  
R3 Republic Steel Corp., Cleveland  
R4 Roebbing Sons Co., John A., Trenton, N. J.  
R5 J. & L. Steel Co., Stainless Div.  
R6 Rodney Metals, Inc., New Bedford, Mass.  
R7 Rome Strip Steel Co., Rome, N. Y.

S1 Sharon Steel Corp., Sharon, Pa.  
S2 Sheffield Steel Div., Kansas City  
S3 Shenango Furnace Co., Pittsburgh  
S4 Simonds Saw and Steel Co., Fitchburg, Mass.  
S5 Sweet's Steel Co., Williamsport, Pa.  
S6 Standard Forging Corp., Chicago  
S7 Stanley Works, New Britain, Conn.  
S8 Superior Drawn Steel Co., Monaca, Pa.  
S9 Superior Steel Corp., Carnegie, Pa.  
S10 Seneca Steel Service, Buffalo

T1 Tonawanda Iron Div., N. Tonawanda, N. Y.  
T2 Tennessee Coal & Iron Div., Fairfield  
T3 Tennessee Products & Chem. Corp., Nashville  
T4 Thomas Strip Div., Warren, O.  
T5 Timken Steel & Tube Div., Canton, O.  
T7 Texas Steel Co., Fort Worth  
T8 Thompson Wire Co., Boston

U1 United States Steel Corp., Pittsburgh  
U2 Universal-Cyclops Steel Corp., Bridgeville, Pa.  
U3 Ulbrich Stainless Steels, Wallingford, Conn.  
U4 U. S. Pipe & Foundry Co., Birmingham

W1 Wallingford Steel Co., Wallingford, Conn.  
W2 Washington Steel Corp., Washington, Pa.  
W3 Weirton Steel Co., Weirton, W. Va.  
W4 Wheatland Tube Co., Wheatland, Pa.  
W5 Wheeling Steel Corp., Wheeling, W. Va.  
W6 Wickwire Spencer Steel Div., Buffalo  
W7 Wilson Steel & Wire Co., Chicago  
W8 Wisconsin Steel Div., S. Chicago, Ill.  
W9 Woodward Iron Co., Woodward, Ala.  
W10 Wyckoff Steel Co., Pittsburgh  
W12 Wallace Barnes Steel Div., Bristol, Conn.  
Y1 Youngstown Sheet & Tube Co., Youngstown, O.

## PIPE AND TUBING

Base discounts (per) f.o.b. mills. Base price about \$200 per net ton

STANDARD T. & C.	BUTTWELD												SEAMLESS											
	1/2 In.		3/4 In.		1 In.		1 1/4 In.		1 1/2 In.		2 In.		2 1/2-3 In.		2 In.		2 1/2 In.		3 In.		3 1/2-4 In.			
	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.		
Sparrows Pt. B3	3.25	+12.0	6.25	+8.0	9.75	+3.50	12.25	+2.75	12.75	+1.75	13.25	+1.25	14.75	+1.50										
Youngstown R3	5.25	+10.0	8.25	+6.0	11.75	+1.50	14.25	+0.75	14.75	0.25	15.25	0.75	16.75	0.50										
Fontana K1	+8.25	+23.5	+5.25	+19.5	+1.75	+15.00	0.75	+14.25	1.25	+13.25	1.75	+12.75	3.25	+13.00										
Pittsburgh J3	5.25	+10.0	8.25	+6.0	11.75	+1.50	14.25	+0.75	14.75	0.25	15.25	0.75	16.75	0.50	*9.25	+24.25	*2.75	+19.50	*0.25	+17.0	1.25	+15.50		
Alton, Ill. L1	3.25	+12.0	6.25	+8.0	9.75	+3.50	12.25	+2.75	12.75	+1.75	13.25	+1.25	14.75	+1.50										
Sharon M3	5.25	+10.0	8.25	+6.0	11.75	+1.50	14.25	+0.75	14.75	0.25	15.25	0.75	16.75	0.50										
Fairless N2	3.25	+12.0	6.25	+8.0	9.75	+3.50	12.25	+2.75	12.75	+1.75	13.25	+1.25	14.75	+1.50										
Pittsburgh N1	5.25	+10.0	8.25	+6.0	11.75	+1.50	14.25	+0.75	14.75	0.25	15.25	0.75	16.75	0.50	*9.25	+24.25	*2.75	+19.50	*0.25	+17.0	1.25	+15.50		
Wheeling W5	5.25	+10.0	8.25	+6.0	11.75	+1.50	14.25	+0.75	14.75	0.25	15.25	0.75	16.75	0.50										
Wheatland W4	5.25	+10.0	8.25	+6.0	11.75	+1.50	14.25	+0.75	14.75	0.25	15.25	0.75	16.75	0.50										
Youngstown Y1	5.25	+10.0	8.25	+6.0	11.75	+1.50	14.25	+0.75	14.75	0.25	15.25	0.75	16.75	0.50	*9.25	+24.25	*2.75	+19.50	*0.25	+17.0	1.25	+15.50		
Indiana Harbor Y1	4.25	+11.0	7.25	+7.0	10.75	+2.50	13.25	+1.75	13.25	+0.75	14.25	+0.25	15.75	+0.50										
Lorain N2	5.25	+10.0	8.25	+6.0	11.75	+1.50	14.25	+0.75	14.75	0.25	15.25	0.75	16.75	0.50	*9.25	+24.25	*2.75	+19.50	*0.25	+17.0	1.25	+15.50		
EXTRA STRONG PLAIN ENDS																								
Sparrows Pt. B3	7.75	+6.0	11.75	+2.0	14.75	2.50	15.25	1.25	15.75	2.25	16.25	2.75	16.75	1.50										
Youngstown R3	9.75	+4.0	13.75	1.00	16.75	4.50	17.25	3.25	17.75	4.25	18.25	4.75	18.75	3.50										
Fairless N2	7.75	+6.0	11.75	+2.0	14.75	2.50	15.25	1.25	15.75	2.25	16.25	2.75	16.75	1.50										
Fontana K1	+3.75	0.25			3.25		3.75		4.25		4.75		5.25											
Pittsburgh J3	9.75	+4.0	13.75	1.00	16.75	4.50	17.25	3.25	17.75	4.25	18.25	4.75	18.75	3.50	*7.75	+21.75	*0.25	+16.0	2.25	+13.50	7.25	+8.50		
Alton, Ill. L1	7.75	+6.0	11.75	+2.0	14.75	2.50	15.25	1.25	15.75	2.25	16.25	2.75	16.75	1.50										
Sharon M3	9.75	+4.0	13.75	1.00	16.75	4.50	17.25	3.25	17.75	4.25	18.25	4.75	18.75	3.50										
Pittsburgh N1	9.75	+4.0	13.75	1.00	16.75	4.50	17.25	3.25	17.75	4.25	18.25	4.75	18.75	3.50	*7.75	+21.75	*0.25	+16.0	2.25	+13.50	7.25	+8.50		
Wheeling W5	9.75	+4.0	13.75	1.00	16.75	4.50	17.25	3.25	17.75	4.25	18.25	4.75	18.75	3.50										
Wheatland W4	9.75	+4.0	13.75	1.00	16.75	4.50	17.25	3.25	17.75	4.25	18.25	4.75	18.75	3.50										
Youngstown Y1	9.75	+4.0	13.75	1.00	16.75	4.50	17.25	3.25	17.75	4.25	18.25	4.75	18.75	3.50	*7.75	+21.75	*0.25	+16.0	2.25	+13.50	7.25	+8.50		
Indiana Harbor Y1	8.75	+5.0	12.75	+1.0	15.75	3.50	16.25	2.25	16.75	3.25	17.25	3.75	17.75	2.50										
Lorain N2	9.75	+4.0	13.75	1.00	16.75	4.50	17.25	3.25	17.75	4.25	18.25	4.75	18.75	3.50	*7.75	+21.75	*0.25	+16.0	2.25	+13.50	7.25	+8.50		

Threads only butt-weld and seamless 2 1/4 pt. higher discount. Plain ends, butt-weld and seamless, 3-in. and under, 5 1/2 pt. higher discount  
Galvanized discounts based on zinc price range of over 9¢ to 11¢ per lb. East St. Louis. For each 2¢ change in zinc, discounts vary as follows: 1/2, 3/4 and 1-in., 2 pt.; 1 1/4, 1 1/2 and 2-in., 1 1/2 pt.; 2 1/2 and 3-in., 1 pt., e.g., zinc price range of over 13¢ to 15¢ would lower discounts on 2 1/2 and 3-in. pipe by 2 points; zinc price in range over 7¢ to 9¢ would increase discounts East St. Louis zinc price now 10¢ per lb.

## TOOL STEEL

F.o.b. mill	W	Cr	V	Mo	Co	per lb	SAE
18	4	1	—	—	—	\$1.68	T-1
18	4	1	—	5	—	2.385	T-4
18	4	2	—	—	—	1.185	T-2
1.5	4	1.5	8	—	—	1.04	M-1
6	4	3	6	—	—	1.43	M-3
6	4	2	5	—	—	1.185	M-2

High-carbon chromium... .83 D-3, D-5  
Oil hardened manganese... .45 O-2  
Special carbon... .41 W-1  
Extra carbon... .345 W-1  
Regular carbon... .29 W-1  
Warehouse prices on and east of Mississippi are 4¢ per lb higher. West of Mississippi, 6¢ higher.

## CLAD STEEL

Base prices, cents per lb f.o.b.

Cladding	Plate (A3, J2, L4)				Sheet (I2)	
	10 pct	15 pct	20 pct	20 pct		
302					37.50	
304	37.95	42.25	46.70	40.00		
316	44.40	49.50	54.50	58.75		
321	40.05	44.60	49.30	47.25		
347	42.40	47.55	52.80	7.00		
405	29.85	33.35	36.85			
410	29.55	33.10	36.70			
430	29.80	33.55	37.25			

CR Strip (S9) Copper, 10 pct, 2 sides, 89.85; 1 side, 33.00.

## ELECTRICAL SHEETS

22-Gage	Hot-Rolled	Cold-Reduced	
		(Coiled or Cut Length)	
F.o.b. Mill	(Cut Lengths)*	Semi-Processed	Fully Processed
Cents Per Lb			
Field		9.625	
Armature	11.10	10.65	11.35
Elect.	11.80	11.55	12.05
Hermetic		12.10	
Motor	12.90	12.65	13.15
Dynamo	13.95	13.70	14.20
Trans. 72	15.00		15.25
Trans. 65	15.55		
Grain Oriented			
Trans. 58	16.05	Trans. 80	19.20
Trans. 52	17.10	Trans. 73	19.70

Producing points: Beech Bottom (W5); Brackenridge (A3); Granite City (G2); Indiana Harbor (I3); Mansfield (E2); Newport, Ky. (N5); Niles, O. (N3); Vandergrift (U1); Warren, O. (R3); Zanesville, Butler (A7).

## LAKE SUPERIOR ORES

51.50% Fe natural content, delivered lower Lake ports. Prices for 1957 season. Freight changes for seller's account.

Gross Ton	
Openhearth lump	\$12.70
Old range, bessemer	11.85
Old range, nonbessemer	11.70
Mesabi, bessemer	11.60
Mesabi, nonbessemer	11.45
High phosphorus	11.45

## WAREHOUSES

Metropolitan Price, dollars per 100 lb.

Cities	City Delivery Charge	Sheets		Strip		Plates		Shapes		Bars		Alloy Bars			
		Hot-Rolled (10 ga. & hr.)	Cold-Rolled (15 gage)	Galvanized (10 gage)††	Hot-Rolled	Standard Structural	Hot-Rolled (merchand)	Hot-Rolled (special quality)	Cold-Finished	Hot-Rolled 4615 As rolled	Hot-Rolled 4615 As rolled	Cold-Drawn 4615 As rolled	Cold-Drawn 4140 As rolled	Cold-Drawn 4140 As rolled	Cold-Drawn 4140 As rolled
Atlanta		8.59	9.87	10.13	8.64	8.97	9.05	9.01	10.68						
Baltimore	\$ .10	8.38	8.88	9.86	8.86	8.76	9.29	9.06	9.16	9.73	16.18	15.18	19.73	18.98	
Birmingham	.15	8.18	9.45	10.15	8.23	8.56	8.64	8.07	8.60	10.57					
Boston	.10	9.41	10.50	11.15	9.45	9.75	9.69	9.07	9.78		15.79	15.24	19.14	19.04	
Buffalo	.15	8.40	9.60	11.22	8.65	9.05	8.65	8.40	8.95	8.85	15.65	15.15	19.01	18.95	
Chicago	.15	8.35	9.60	10.15	8.38	8.71	8.79	8.07	8.75	8.95	15.30	14.65	18.65	18.40	
Cincinnati	.15	8.49	9.65	10.20	8.69	9.08	9.33	8.53	9.07	9.46	15.61	15.11	18.95	18.91	
Cleveland	.15	8.33	9.60	10.10	8.48	8.94	9.16	8.16	8.84	9.20	15.39	14.74	18.74	18.54	
Denver		9.70	11.30	12.49	9.80	9.70	9.80	9.95	10.65					17.60	
Detroit	.15	8.58	9.85	10.50	8.73	9.06	9.33	8.52	9.05	9.30	15.46	15.06	18.81	18.86	
Houston		8.45	9.75		8.60	9.05	9.10	9.05	9.05	11.10	16.20		19.30	19.05	
Kansas City	.20	8.52	9.72	10.07	8.60	8.83	8.87	8.73	9.42	15.32	14.77	18.72	18.42		
Los Angeles	.10	9.60	10.85	11.75	9.65	9.65	9.70	9.10	9.80	12.85	16.45	15.00	20.30	19.25	
Memphis	.15	8.02	9.22		8.12	8.35	8.39	8.25	9.85						
Milwaukee	.15	8.48	9.73	10.28	8.51	8.84	9.00	8.88	8.88	9.18	15.43	14.93	18.78	18.73	
New York	.10	8.97	10.23	10.66	9.42	9.53	9.45	9.48	9.67		15.02	15.19	18.42	18.99	
Norfolk	.20	8.00			8.40	8.35	8.70	8.45	10.70						
Philadelphia	.10	8.10	9.00	10.34	8.79	8.87	8.60	8.75	9.18	9.41	15.61	15.11	18.96	18.91	
Pittsburgh	.15	8.33	9.60	10.50	8.48	8.71	8.79	8.75	9.20	15.80	14.80	19.35	18.60		
Portland		9.50	11.20	11.55	11.35	9.30	9.65	9.65	9.65	14.50	18.50	16.10	20.75	20.25	
San Francisco	.10	9.45	10.85	11.10	11.05	9.70	9.60	9.80	9.80	13.10	16.45	15.50	20.30	19.60	
Seattle		9.15	11.15	12.00	10.00	9.70	9.80	10.10	9.85	14.05	16.55	15.85	19.50	19.45	
Spokane	.15	10.10	11.30	12.15	10.15	9.85	9.95	10.25	10.00	14.20		17.25		21.05	
St. Louis	.15	8.69	9.94	10.51	8.74	9.08	9.25	8.43	9.12	9.56	15.66	15.01	19.01	18.81	
St. Paul	.15	8.94	10.19	10.76	8.99	9.45	9.53	9.22	9.37	9.81		15.26		19.06	

Base Quantities (Standard unless otherwise keyed): Cold finished bars: 2000 lb or over. Alloy bars: 1000 to 1999 lb. All others: 2000 to 4999 lb. All HR products may be combined for quantity. All galvanized sheets may be combined for quantity. CR sheets may not be combined with each other or with galvanized sheets for quantity.  
† 16 gage. †† 10¢ zinc. ‡ Deduct for country delivery.

## MERCHANT WIRE PRODUCTS

F.o.b. Mill	Col	Standard Q Coated Nails		Fence Posts		Single Loop Bale Ties		Galv. Barbed and Twisted Barbed Wire		Merch. Wire Anvil		Merch. Wire Galv.	
		Col	Col	Col	Col	Col	Col	Col	Col	Col	Col	Col	Col
Alabama City R3	173	187		212	193								
Albion J3***	173	190											
Atlanta A8**	175			208	199								
Bartonville K2**	175	192		178	214	198							
Buffalo W6													
Chicago N4***													
Cleveland A6													
Crawford M4**	175	192		214	198								
Donora, Pa. A5	173	187		212	193								
Duluth A5	173	187		212	193								
Fairfield, Ala. T2	173	187		212	193								
Galveston D4	8.95												
Houston S2	178	192		217	198								
Jacksonville M4	184	197		219	203								
Johnstown B3**	173	190**	172	196**									
Joliet, Ill. A5	173	187		212	193								
Kokomo C9*	175	189*		214	195*								
L. Angeles B2***													
Kansas City S2*	178	192*		217	198*								
Minneapolis C6†	178	192†	177	217	198†								
Monaca P6													
Palmer, Mass. W6													
Pittsburg, Cal. C2	182	210		213									
Rankin, Pa. A5	173	187		212	193								
So. Chicago R3	173	187		212	193								
S. San Fran. C6†													
Sparrows Pt. B3**	175			214	198								
Struthers, O. Y1*													
Worcester A5	179												
Williamsport S5													

\* Zinc less than .10¢.  
\*\* 11-12¢ zinc.  
\*\*\* 10¢ zinc.  
† Plus zinc extras.  
‡ Wholesalers only.

## C-R SPRING STEEL

Cents Per Lb F.o.b. Mill	CARBON CONTENT					
	0.26	0.41	0.61	0.81	1.06	
	0.40	0.60	0.80	1.05	1.35	
Baltimore, Md. T8	9.50	10.70	12.90	15.90	18.85	
Bristol, Conn. W12	9.50	10.70	12.90	15.90	18.85	
Boston T8	9.50	10.70	12.90	15.90	18.85	
Buffalo, N. Y. R7	9.50	10.70	12.90	15.90	18.85	
Carnegie, Pa. S9	9.50	10.70	12.90	15.90	18.85	
Cleveland A5	9.50	10.70	12.90	15.90	18.85	
Dearborn S1	9.05	10.50	12.70			
Detroit D1	9.05	10.50	12.70	15.70		
Detroit D2	9.05	10.50	12.70			
Dover, O. G4	9.50	10.70	12.90	15.90	18.85	
Evanston, Ill. M8	9.05	10.40	12.60			
Franklin Park, Ill. T8	9.05	10.25	12.45	15.45	18.48	
Harrison, N. J. C11			12.90	16.10	19.30	
Indianapolis C5						
Los Angeles	11.15	12.60	14.80	17.80		
New Castle, Pa. B4	8.95	10.40	12.60	15.60		
New Haven, Conn. D1	9.40	10.70	12.90	15.90		
Pawtucket, R. I. N7	9.50	10.70	12.90	15.90	18.85	
Pittsburgh S7	9.50	10.70	12.90	15.90	18.85	
Riverdale, Ill. A1	9.05	10.40	12.60	15.60	18.55	
Sharon, Pa. S1	8.95	10.40	12.60	15.60	18.85	
Trenton R4		10.70	12.90	16.10	19.30	
Wallingford W1	9.40	10.70	12.90	15.90	18.75	
Warren, Ohio T4						
Worcester, Mass. A5	9.50	10.70	12.90	15.90	18.85	
Yongstown C3						

## BOILER TUBES

\$ per 100 ft. carload lots, cut 10 to 24 ft. F.o.b. Mill	Size		Seamless		Elec. Weld	
	OD-In.	H.W. Ga.	H.R.	C.D.	H.R.	C.D.
Babcock & Wilcox	2	13	36.34	42.56	33.21	.....
	2½	12	48.94	57.31	44.73	.....
	3	12	56.51	66.18	51.66	.....
	3½	11	65.97	77.25	60.30	.....
	4	10	87.61	102.59	80.07	.....
National Tube	2	13	36.34	42.56	33.21	.....
	2½	12	48.94	57.31	44.73	.....
	3	12	56.51	66.18	51.66	.....
	3½	11	65.97	77.25	60.30	.....
	4	10	87.61	102.59	80.07	.....
Pittsburgh Steel	2	13	36.34	42.56	.....	.....
	2½	12	48.94	57.31	.....	.....
	3	12	56.51	66.18	.....	.....
	3½	11	65.97	77.25	.....	.....
	4	10	87.61	102.59	.....	.....

## RAILS, TRACK SUPPLIES

F.o.b. Mill Cents Per Lb.	No. 1 Std. Rails	Light Rails	Joint Bars	Track Spikes	Screw Spikes	Tie Plates	Track Bolts (Unthreaded)
Beasmer U1	5.525	6.50	6.975				14.75
Cleveland R3				9.75			
So. Chicago R3	5.525	6.50					
Ensley T2			9.75				
Fairfield T2	5.525	6.50		6.60			
Gary U1	5.525			6.60			
Huntington C16		6.50					
Ind. Harbor I3	5.525		6.975	9.75	6.60		
Ind. Harbor Y1				9.75			
Johnstown B3		6.50					
Joint U1			6.975				
Kansas City S2				9.75			14.75
Lackawanna B3	5.525	6.50	6.975		6.60		
Lebanon B3			6.975		14.50		14.75
Minneapolis C6	5.525	7.00	6.975	9.75	6.60		14.75
Pittsburgh P5							14.75
Pittsburgh J3				9.75			15.25
Seattle B2				10.25			6.75
Steelton B1	5.525		6.975		6.60		
Struthers Y1				9.75			
Torrance C7					6.75		
Williamsport S5		6.50					
Youngstown R3				9.75			

## COKE

Purnace, beehive (f.o.b. oven) Net-Ton  
Connellsville, Pa. .... \$15.00 to \$15.75  
Foundry, beehive (f.o.b. oven) .... \$17.50 to \$19.00

## Foundry oven coke

Buffalo, delf'd	\$31.75
Detroit, f.o.b.	30.50
New England, delf'd	31.55
Kearney, N. J., f.o.b.	29.75
Philadelphia, f.o.b.	29.50
Swedeland, Pa., f.o.b.	29.50
Painesville, Ohio, f.o.b.	30.50
Erie, Pa., f.o.b.	30.50
Cleveland, delf'd	32.65
Cincinnati, delf'd	31.84
St. Paul, f.o.b.	29.75
St. Louis, f.o.b.	31.50
Birmingham, f.o.b.	28.85
Milwaukee, f.o.b.	30.50
Neville, Ia., Pa.	29.25

## ELECTRODES

Cents per lb. f.o.b. plant, threaded, with  
nipples, unboxed.

GRAPHITE			CARBON*		
Diam. (In.)	Length (In.)	Price	Diam. (In.)	Length (In.)	Price
24	84	24.75	40	100-110	10.70
20	72	24.00	35	110	10.70
16 to 18	72	24.50	30	110	10.85
14	72	25.00	24	72 to 84	11.25
12	72	25.50	20	90	11.00
10	60	26.50	17	72	11.40
10	48	27.00	14	72	11.85
7	60	26.75	12	60	12.95
6	60	30.00	10	60	13.80
4	40	33.25	8	60	13.30
3	40	35.25			
2 1/2	30	37.25			
2	24	57.75			

\* Prices shown cover carbon nipples.

## ELECTROPLATING SUPPLIES

## Anodes

(Cents per lb. f.o.b. plant, threaded, with  
nipples, unboxed.)

Copper	
Cast elliptical, 18 in. or longer,	
5000 lb lots	45.75
Electrodeposited	37.00
Brass, 80-20, ball anodes, 2000 lb	48.00
or more	18.00
Zinc, ball anodes, 2000 lb lots	
(for elliptical add 2¢ per lb)	
Nickel, 99 pct plus, rolled carbon,	
5000 lb	102.25
(Rolled depolarized add 3¢ per lb)	
Cadmium	1.70
Tin, ball anodes and elliptical \$1.07 per lb.	

## Chemicals

(Cents per lb. f.o.b. shipping point)	
Copper cyanide, 100 lb drum	74.80
Copper sulphate, 100 lb bags, per	
cwt.	24.35
Nickel salts, single, 100 lb bags	40.50
Nickel chloride, freight allowed,	
300 lb	45.50
Sodium cyanide, domestic, f.o.b.	
N. Y., 200 lb drums	23.05
(Philadelphia price 23.30)	
Zinc cyanide, 100 lb	59.00
Potassium cyanide, 100 lb drum	
N. Y.	48.00
Chromic acid, flake type, 100,000 lb	
or more	31.00

## BOLTS, NUTS, RIVETS, SCREWS

(Base discount, f.o.b. mill)  
Pct Discounts

Machine and Carriage Bolts	Full Container Price	30 Containers	20,000 Lb.	40,000 Lb.
1/2" and smaller x 6" and shorter	49	54	56	57
3/8" thru 1" x longer than 6"	35	40	43	46
Rolled thread carriage bolts 1/2" & smaller	49	54	56	57
x 6" and shorter				
Lag, all diam. x 6" & shorter	49	54	56	57
Lag, all diam. longer than 6 in.	39	44 1/2	47	48 1/2
Flow bolts, 1/2" and smaller x 6" and shorter	49	54	56	57

(Add 25 pct for broken case quantities)

Nuts, Hex, HP reg. & hvy.	Full case or Keg price
3/4 in. or smaller	60 1/2
7/8 in. to 1 in. inclusive	55 1/2
1 1/8 in. to 1 1/2 in. inclusive	58 1/2
1 5/8 in. and larger	63 1/2

## C. P. Hex reg. &amp; hvy.

3/4 in. and smaller	60 1/2
7/8 in. to 1 1/2 in. inclusive	55 1/2
1 1/8 in. and larger	63 1/2

## Hot Galv. Hex Nuts (All Types)

3/4 in. and smaller	46 1/2
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## Semi-finished Hex Nuts

3/4 in. or smaller	60 1/2
3/4 in. to 1 1/2 in. inclusive	55 1/2
1 1/8 in. and larger	63 1/2

(Add 25 pct for broken case or keg  
quantities)

## Finished

3/4 in. and smaller	63
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## Rivets

	Base per 100 lb
1/2 in. and larger	\$12.25
	Pct Off List
7/16 in. and smaller	19

## Cap Screws

Discount (Packages)  
Full Finished H. C. Heat Treat

New std. hex head, pack- aged	
5/8" diam. and smaller x 6" and shorter	40 26
3/4" 3/8" and 1" diam. x 6" and shorter	23 8
5/8" diam. and smaller x longer than 6"	8 +13
3/4", 3/8", and 1" diam. x longer than 6"	+ 6 +32

C-1018 Steel  
Full-Finished  
Cartons Bulk

1/4" through 5/8" dia. x 6" and shorter	58 49
3/4" through 1" dia. x 6" and shorter	45 33
Minimum quantity—1/4" through diam., 15,000 pieces; 1/16" through diam., 5,000 pieces; 3/8" through 1" diam., 2,000 pieces.	

## Machine Screws &amp; Stove Bolts

	Discount	Mach. Screws	Stove Bolts
Plain Finish			
Cartons	19	32	
Bulk			
To 1/4" diam. incl.	25,000-200,000	9	54
5/16 to 1/2" diam. incl.	15,000-100,000	9	54
All diam. over 3" long	5,000-100,000	—	54

## Machine Screws &amp; Stove Bolt Nuts

	Discount	Hex	Square
In cartons	16	19	
In Bulk			
3/4" diam. & smaller	15,000-100,000	7	9

## CAST IRON WATER PIPE INDEX

Birmingham	119.0
New York	181.7
Chicago	134.1
San Francisco-L. A.	141.8
Dec. 1955 value, Class B or heavier 5 in. or larger, bell and spigot pipe. Ex- planation: p. 57, Sept. 1, 1955, issue.	
Source: U. S. Pipe and Foundry Co.	

## REFRACTORIES

## Fire Clay Brick

Carloads per 1000	
First quality, Ill., Ky., Md., Mo., Ohio, Pa. (except Salina, Pa., add \$5.00)	\$135.00
No. 1 Ohio	120.00
Sec. quality, Pa., Md., Ky., Mo., Ill.	103.00
No. 2 Ohio	103.00
Ground fire clay, net ton, bulk (except Salina, Pa., add \$2.00)	21.50

## Silica Brick

Mt. Union, Pa., Ensley, Ala.	\$150.00
Childs, Hays, Pa.	155.00
Chicago District	160.00
Western Utah	175.00
California	180.00
Super Duty	
Hays, Pa., Athens, Tex., Wind- ham, Warren, O., Morrisville	157.00-160.00
Silica cement, net ton, bulk, Latrobe	28.50
Silica cement, net ton, bulk, Chi- cago	25.50
Silica cement, net ton, bulk, Ens- ley, Ala.	26.50
Silica cement, net ton, bulk, Mt. Union	24.50
Silica cement, net ton, bulk, Utah and Calif.	37.00

## Chrome Brick

Per net ton	
Standard chemically bonded, Balt.	\$105.00
Standards chemically bonded, Curt- iner, Calif.	115.00
Burned, Balt.	99.00

## Magnesite Brick

Standard, Baltimore	\$131.00
Chemically bonded, Baltimore	116.00

## Grain Magnesite St. 3/4 to 1/2-in. grains

Domestic, f.o.b. Baltimore in bulk	\$73.00
Domestic, f.o.b. Chewelah, Wash., Luning, Nev.	
in bulk	46.00
in sacks	52.00-54.00

## Dead Burned Dolomite Per net ton

F.o.b. bulk, producing points in:	
Pa., W. Va., Ohio	\$16.00
Midwest	16.35
Missouri Valley	15.00

## METAL POWDERS

Per pound, f.o.b. shipping point, in ton lots, for minus 100 mesh	
Swedish sponge iron, del. East of Miss. River, ocean bags, 23,000 lb. and over	10.5¢
F.O.B. Riverton or Camden, New Jersey, West of Miss. River	9.5¢
Domestic sponge iron, 98+% Fe, 23,000 lb. and over delf'd East of Miss. River	10.5¢
F.O.B. Riverton, New Jersey, West of Miss. River	9.5¢
Canadian sponge iron, delf'd in East, carloads	9.5¢
Electrolytic iron, annealed, imported 99.5+% Fe	27.5¢
domestic 99.5+% Fe	36.5¢
Electrolytic iron, unannealed minus 325 mesh, 99+% Fe	57.0¢
Electrolytic iron melting stock, 99.84% pure	22.0¢
Carbonyl iron size 3 to 20 micron, 98%, 99.8+% Fe, .88¢ to \$2.90	to \$2.90
Aluminum, freight allowed	38.00¢
Brass, 10 ton lots	37.4¢ to 41.5¢
Copper electrolytic	45.75¢
Copper, reduced	49.75¢
Cadmium, 100-199 lb. 95¢ plus metal value	
Chromium, electrolytic, 99.85% min. Fe .03 max. Delf'd	\$5.00
Lead	8.90¢ plus metal value
Manganese f.o.b. Extron, Pa.	46.0¢
Molybdenum, 99%	\$3.60 to \$3.95
Nickel, chemically precipitat-d	\$1.05
Nickel, unannealed	\$1.00
Nickel, annealed	\$1.06
Nickel, spherical, unannealed	
±80	\$1.18
Silicon	43.50¢
Solder powder, 7.0¢ to 9.0¢ plus met. value	
Stainless steel, 302	\$1.02
Stainless steel, 316	\$1.20
Tin	14.00¢ plus metal value
Tungsten, 99% (65 mesh) \$3.75 (nominal)	
Zinc, 10 ton lots	18.5¢ to 31.7¢



# FERROALLOY PRICES

(Effective Aug. 6, 1937)

## Ferrochrome

Cents per lb contained Cr, lump, bulk, carloads, del'd. 67-71% Cr, 59-100% max. Si.	
0.02% C.....	41.50
0.03% C.....	41.00
0.06% C.....	39.50
0.10% C.....	39.00
0.15% C.....	38.75
4.00-4.50% C, 67.70% Cr, 1-2% Si.	27.75
8.50-5.00% C, 57-64% Cr, 2.00-4.50% Si.	26.50
0.025% C (Simplex).....	34.75
0.10% C, 50-52% Cr, 2% max Si.	35.50
8.50% max. C, 50-55% Cr, 3-6% Si.	24.00
8.50% C, 50-55% Cr, 3% max. Si.	24.00

## High Nitrogen Ferrochrome

Low-carbon type 0.75% N. Add 5¢ per lb to regular low carbon ferrochrome max 0.10% C price schedule. Add 5¢ for each additional 0.25% of N.

## Chromium Metal

Per lb chromium contained, packed, delivered, ton lots, 97% min. Cr, 1% max. Fe.	
0.10% max. C.....	\$1.31
0.50% max. C.....	1.31
9 to 11% C, 88-91% Cr, 0.75% Fe.	1.40

## Electrolytic Chromium Metal

Per lb of metal 2" x D plate (1/4" thick) delivered packed, 99.89% min. Cr. (Metallic Base) Fe 0.20 max.	
Carloads.....	\$1.29
Ton lots.....	1.31
Less ton lots.....	1.33

## Low Carbon Ferrochrome Silicon

(Cr 34-41%, Si 42-45%, C 0.05% max.)	
Carloads, delivered, lump, 3-in. x down, per lb of Cr, packed.	
Carloads.....	44.65
Ton lots.....	48.95
Less ton lots.....	51.45

## Calcium-Silicon

Per lb of alloy, lump, delivered, packed, 30-33% Cr, 60-65% Si, 3.00 max. Fe.	
Carloads.....	25.66
Ton lots.....	27.95
Less ton lots.....	29.45

## Calcium-Manganese-Silicon

Cents per lb of alloy, lump, delivered, packed.	
16-20% Ca, 14-18% Mn, 53-59% Si.	
Carloads.....	24.25
Ton lots.....	26.15
Less ton lots.....	27.15

## SMZ

Cents per pound of alloy, delivered, 60-65% Si, 5-7% Mn, 5-7% Zr, 20% Fe 1/2 in. x 12 mesh.	
Ton lots.....	20.15
Less ton lots.....	21.40

## V Foundry Alloy

Cents per pound of alloy, f.o.b. Suspension Bridge, N. Y., freight allowed, max. St. Louis, V-5; 38-42% Cr, 17-19% Si, 8-11% Mn, packed.	
Carload lots.....	17.20
Ton lots.....	18.70
Less ton lots.....	19.95

## Graphidox No. 4

Cents per pound of alloy, f.o.b. Suspension Bridge, N. Y., freight allowed, max. St. Louis, Si 48 to 52%, Ti 9 to 11%, Ca 5 to 7%.	
Carload packed.....	18.50
Ton lots to carload packed.....	19.65
Less ton lots.....	20.90

## Ferromanganese

Maximum base price, f.o.b., lump size, base content 74 to 76 pct Mn.

Producing Point	Cents per-lb
Marietta, Ashitabula, O.; Alloy, W. Va.; Sheffield, Ala.; Portland, Ore.	12.75
Johnstown, Pa.	12.75
Sheridan, Pa.	12.75
Philo, Ohio	12.75
S. Duquesne	12.75
Add or subtract 0.1¢ for each 1 pct Mn above or below base content.	
Briquets, delivered, 66 pct Mn:	
Carloads, bulk.....	14.80
Ton lots packed.....	17.20

## Spiegeleisen

Per gross ton, lump, f.o.b. Palmerton, Pa.	
Manganese Silicon	
16 to 19% 3% max.....	\$100.50
19 to 21% 3% max.....	102.50
21 to 23% 3% max.....	105.00

## Manganese Metal

2 in. x down, cents per pound of metal delivered.	
95.50% min. Mn, 0.2% max. C, 1% max. Si, 2.5% max. Fe.	
Carload, packed.....	45.75
Ton lots.....	47.25

## Electrolytic Manganese

F.o.b. Knoxville, Tenn., freight allowed east of Mississippi, f.o.b. Marietta, O., delivered, cents per pound.	
Carloads.....	34.00
Ton lots.....	36.00
250 to 1999 lb.....	38.00
Premium for Hydrogen-removed metal.....	0.75

## Medium Carbon Ferromanganese

Mn 80 to 85%, C 1.25 to 1.50, Si 1.50% max., carloads, lump, bulk, delivered, per lb of contained Mn.....	25.50
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## Low-Carb Ferromanganese

Cents per pound Mn contained, lump size, del'd Mn 85-90%.	
Carloads Ton Less	
0.07% max. C, 0.06% P, 90% Mn.....	37.15 39.95 41.15
0.07% max. C.....	35.10 37.90 39.10
0.10% max. C.....	34.35 37.15 38.35
0.15% max. C.....	33.60 36.40 37.60
0.30% max. C.....	32.10 34.90 36.10
0.50% max. C.....	31.60 34.40 35.60
0.75% max. C, 80.85% Mn, 5.0-7.0% Si.....	28.60 31.40 32.60

## Silicomanganese

Lump size, cents per pound of metal, 65-68% Mn, 18-20% Si, 1.5% max. C for 2% max. C, deduct 0.2¢ f.o.b. shipping point.	
Carloads bulk.....	12.80
Ton lots, packed.....	14.45
Briquet contract basis carloads, bulk, delivered, per lb of briquet.....	15.10
Ton lots, packed, pallets.....	16.50

## Silvery Iron (electric furnace)

Si 15.50 to 16.00 pct, f.o.b. Keokuk, Iowa, or Wenatchee, Wash., \$106.50 gross ton, freight allowed to normal trade area, Si 15.01 to 15.50 pct, f.o.b. Niagara Falls, N. Y., \$93.00.	
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## Silicon Metal

Cents per pound contained Si, lump size, delivered, packed.	
Ton lots, packed Carloads, packed	
96.75% Si, 1.25% Fe.....	22.20 20.90
98% Si, 0.75% Fe.....	22.95 21.65

## Silicon Briquets

Cents per pound of briquets, bulk, delivered, 40% Si, 2 lb Si, briquets.	
Carloads, bulk.....	7.70
Ton lots, packed.....	10.50

## Electric Ferrosilicon

Cents per lb contained Si, lump, bulk, carloads, f.o.b. shipping point.	
50% Si.....	13.00
65% Si.....	15.25
80% Si.....	18.10
90% Si.....	19.50

## Ferrovandium

50-55% V delivered, per pound, contained V, carloads, packed.	
Openhearth.....	3.20
Crucible.....	3.30
High speed steel (Primos).....	3.40

## Calcium Metal

Eastern zone, cents per pound of metal, delivered.	
Cast Turnings Distilled	
Ton lots.....	\$2.05 \$2.95 \$3.75
Less ton lots.....	2.40 3.30 4.55

Alifer, 20% Al, 40% Si, 40% Fe, f.o.b. Suspension Bridge, N. Y., per lb.	
Carloads.....	10.85¢
Ton lots.....	11.80

Calcium molybdate, 43.6-46.6% f.o.b. Langeloth, Pa., per pound contained Mo.....	\$1.28
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Ferrocolumbium, 50-50%, 2 in. x D, delivered per pound contained Cb.	
Ton lots.....	\$4.90
Less ton lots.....	4.95

Ferro-tantalum-columbium, 20% Ta, 40% Cb, 0.30% C, del'd ton lots, 2-in. x D per lb cont'd Sb plus Ta.....	\$4.25
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Ferromolybdenum, 55-75%, 200-lb containers, f.o.b. Langeloth, Pa., per pound contained Mo.....	\$1.68
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Ferrophosphorus, electric, 23-25% car lots, f.o.b. Slick, Mt. Pleasant, Tenn., \$4.00 unitage, per gross ton.....	\$90.00
10 tons to less carload.....	\$110.00

Ferrotitanium, 40% regular grade 0.10% C max., f.o.b. Niagara Falls, N. Y., and Bridgeville, Pa., freight allowed, ton lots, per lb contained Ti.....	\$1.36
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Ferrotitanium, 25% low carbon, 0.10% C max., f.o.b. Niagara Falls, N. Y., and Bridgeville, Pa., freight allowed, ton lots, per lb contained Ti.....	\$1.50
Less ton lots.....	\$1.54

Ferrotitanium, 15 to 18% high carbon, f.o.b. Niagara Falls, N. Y., freight allowed, carload per net ton.....	\$240.00
Ferrotungsten, 1/4 x down, packed, per pounds contained W, ton lots delivered.....	\$2.60 (nominal)

Molybde oxide, briquets per lb contained Mo, f.o.b. Langeloth, Pa., bags, f.o.b. Washington, Pa. Langeloth, Pa.....	\$1.41
Simanal, 20% Si, 20% Mn, 20% Al, f.o.b. Philo, Ohio, freight allowed, per lb.....	\$1.50

Carload, bulk lump.....	18.50¢
Ton lots, packed lump.....	20.50¢
Less ton lots.....	21.00¢

Vanadium oxide, 86-88% V, per pound contained V.....	\$1.38
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Zirconium, per lb of alloy of alloy 35-40% f.o.b. freight allowed, carloads, packed.....	27.25¢
12-15% del'd lump, bulk, carloads.....	9.25¢

## Boron Agents

Borasil, per lb of alloy del. f.o.b. Philo, Ohio, freight allowed, B 3-4%, Si 40-45%, per lb contained B.....	
2000 lb carload.....	\$5.50

Bortan, f.o.b. Niagara Falls, Ton lots per pound.....	45¢
Less ton lots, per pound.....	50¢

Corbortan, Ti 15-21%, B 1-2%, Si 2-4%, Al 1-2%, C 4-5-7.5%, f.o.b. Suspension Bridge, N. Y., freight allowed.	
Ton lots per pound.....	14.00¢

Ferroboron, 17.50 min. B, 1.50% max. Si, 0.50% max. Al, 0.50% max. C, 1 in. x D, ton lots, f.o.b. Wash., Pa., Niagara Falls, N. Y., delivered 100 lb up.....	\$1.30
10 to 14% B.....	.85
14 to 19%.....	1.20
19% min. B.....	1.50

Grinal, f.o.b. Bridgeville, Pa., freight allowed, 100 lb and over No. 1.....	\$1.05
No. 79.....	50¢

Manganese-Boron, 75.00% Mn, 15.20% B, 5% max. Fe, 1.50% max. Si, 3.00% max. C, 2 in. x D, del'd.	
Ton lots.....	\$1.46
Less ton lots.....	1.57

Nickel-Boron, 15-18% B, 1.00% max. Al, 1.50% max. Si, 0.50% max. C, 3.00% max. Fe, balance Ni, del'd less ton lots.....	\$2.15
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# RAILWAY EQUIPMENT FOR SALE

Used - As Is - Reconditioned

## RAILWAY CARS

All Types

SERVICE-TESTED

## FREIGHT CAR REPAIR PARTS

For All Types of Cars

## LOCOMOTIVES

Diesel, Steam, Gasoline  
Diesel-Electric

### SPECIAL

#### STANDARD GAUGE CARS

10—Air-Operated, 30-Cubic Yard,  
Drop Door

#### SIDE DUMP CARS

#### ORE HOPPER CARS

20—40-Ton Capacity

#### COVERED HOPPER CARS

15—70-Ton Capacity

## RAILWAY TANK CARS and STORAGE TANKS

6,000- 8,000- and 10,000-Gallon  
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**"ANYTHING containing IRON  
or STEEL"**

## THE CLEARING HOUSE

# Summer Sales Spurt At Philadelphia

**Used machinery dealers there welcomed a buying surge during final half of July.**

**They expect the sales step-up to continue through August into the fall.**

■ Summer heat proved no handicap to used machinery sales in the Philadelphia area during the last half of July. While the first half of the month was seasonally slow, business really bloomed in the final two weeks.

"A lot of earlier inquiries suddenly matured into orders," says one dealer. "Buyers got in a hurry to line up equipment," another adds.

**Big Dollar Items** — The result was a splash of business which did its share in peppering up the market. Particularly pleased was the fact that the big dollar items—large lathes, millers, boring machines and presses—accounted for the bulk of the sales.

Dealers who normally expect a quiet July were pleasantly surprised and, with a general business pickup expected, they look for a good August. They advise that inquiries continue to come in at a good rate. And while some of the July spurt stemmed from earlier inquiries, part of it represented customers just entering the market.

The buyer enthusiasm is welcomed, rather than analyzed by the dealers. They do indicate that the customers themselves seem more encouraged about fall and winter business. "Long faces are disappearing," is the way one dealer puts it.

**Holding Back Ends** — Many of the used tool buyers who have been hanging back are finding they do have government contracts to meet or orders to fill and need machines to do the job. But tight money is still a factor in the market.

The suppliers indicate the hard money outlook is naturally proving less a handicap to medium and large size firms than to the smaller outfits. The bigger companies, however, were among those holding back on buying in the spring.

Dealers in an effort to encourage business are going in more for rental and installment buying arrangements. Where good customers have production orders to fill, the dealers feel they've got little to lose.

Market activity is not confined to dealers who serve the local area. One seller who does little local business also reports a busy July. And his inquiry rate from other areas remains strong.

**Supply Improves** — Supply of good tools continues as a problem, although dealers are not worrying about it as much as they did a while ago. For one thing manufacturers who found production slowing down put some used machines on the market rather than keep them idle.

What about the future? Even dealers who didn't note the July surge are confident about business for the fall. The feeling is that with increased industrial activity there's bound to be a greater interest in purchasing new or used production equipment. And the suppliers of used machinery are counting on getting their share of sales.

# CONSIDER GOOD USED EQUIPMENT FIRST

## AIR COMPRESSOR

450 cu. ft. Ingersoll Rand XRE, 100# Pressure 100 H.P. Westinghouse Motor 440/3/60.

## BENDER & STRAIGHTENER

Pels Type JII-26 Bends & Straightens Beams 15x5.84 450 lb. Angles Equal 8x2 1/2, etc.

## BENDING ROLLS

10' x 10' G. Bertsch Initial Type  
10' x 1/2" Killing Pyramid Type-LATE  
16' x 1/2" Ransome, Pyramid Type  
20' x 1" Biles & Jones Pyramid Type

## BRACKS-LEAF TYPE

8' x 3/16" Dreis & Krump  
12' x 1/4" Dreis & Krump  
12' x 1/2" Dreis & Krump No. 228

## BRACKS-PRESS TYPE

14' x 1/2" Superior Hydraulic-NEW  
100 ton Pacific Hydr. Model #100-6 Overall width 8'.  
24" Horn Extension

## CRANES-OVERHEAD ELECTRIC TRAVELING

3 ton Pelli  
5 ton Whittling  
5 ton Case  
8 ton P&H  
10 ton Shepard Niles  
15 ton Shepard Niles  
15 ton Shepard Niles  
15 ton Shepard Niles  
15 ton Niles  
20 ton P&H

## DRAW BENCH

10,000-2 Acme Standard Single Draw Tube Draw Bench 44 Ft. Max. Length of Draw

## FORGING MACHINES

1" to 5" Acme, Ajax, National

## HAMMERS-BROAD DROP-STEAM DROP-STEAM FORGING

1200, 1500 lb. Chambersburg Board Drop  
2000 lb. Erie Type FV Board Drop  
2000 lb. Chambersburg Model E Steam Drop  
2000, 2500 lb. Erie Steam Drop  
3000 lb. Niles Remont Pond Steam Drop  
4000 lb. Chambersburg Steam Drop  
1100 lb. Erie Single Frame Steam Forging  
1500 lb. Chambersburg Sael Fr Steam Forging  
20,000 lb. Maxey Arch Frame Steam Forging  
18' x 18" Chambersburg Aero Stamp

## LEVELERS-ROLLER

37" Torrington, 19 Roll 1-31-32" Dia. Backed up  
42" Bliss Capacity 125" LATE  
14 McKay, 17 Rolle, 35" Dia.

## PLANNER-PLATE EDGE

35" Southwark, 16 Pneu. Jacks, Capy. 1 1/2"

## PRELIMINARY-HYDRAULIC

100 ton Modia Steam Hydr. Forging Press  
2000 ton Bliss Hydro-Dynamic, 18" Stroke Bed Area  
54" x 35"

## PRELIMINARY-STRAIGHT SIDE

100 ton Clearing F1100, 14" Str. Rod 36"x36"  
180 ton Hamilton 2547 12" Str. Rod 36"x36"  
250 ton Bliss 288 12" Str. Rod 28"x28"  
250 ton Bliss 288 12" Str. Rod 36"x36"

## PRELIMINARY-TOGGLE DRAWING

23 1/2" Bliss 125 ton, Bolster 19" x 26"  
23 1/2" Bliss 125 ton, Bolster 19" x 26"

## PUNCH & SHEAR COMBINATIONS

Cleveland Style G Single End, 60" Throat  
Cleveland Style M 60" Throat  
No. 15" Buffalo Union Ironworker

## ROLLING MILLS

6' x 5" Torrington Wire Flattening Mill Line  
10' x 14" Single Stand Two High

10' x 16" Single Stand Two High  
12' x 12" Single Stand Two High  
12' x 16" Single Stand Two High  
16' x 20" Farrel Two Stand Two High  
26' x 72" Cold Rolling Mill

## SHEAR-ALLIGATOR

No. 4 Mesta RH LK, Capacity 2" x 12"

## SHEAR-GATE

12' x 8" Niagara Model 1212, NEW 1951

## SHEAR LINES

36" Hallden Shear Line  
60" Shear Line, With Leveler & Tables  
96" x 14 Ga. Cleveland, With Playoff, Leveler, Elect.

## SHEARS-SQUARING

6' x 10 Ga. Niagara No. 672  
8' x 1/2" Niagara-NEW 1952  
10' x 1/2" Cincinnati 21810  
10' x 1/2" Cincinnati 22510

## SHEARS-ANGLE

600x4" Biles & Jones  
48x3" Long & Allister

## SLITTERS

21" Voder Slitting Line  
36" Paxon Slitting Line  
12" Hinson 1 1/2" Shaft Dia.

## STRAIGHTENERS

No. 3 Medart 3 Roll, Capacity to 1 1/2" Tubing  
Kane & Roach Roll Straightener & Cut-off Capacities  
12" to 3" Hex Bars

## SWAGING MACHINES

24 Fenn, Capacity 2 1/2" Tubing, LATE  
20 1/2" Fenn, Capacity 2 1/2" Tube 3 1/2" Solid 16"  
Dir Length Hydraulic Feed, LATE

## WELDERS-SEAM

200 KVA Progressive Universal 220 Volt  
200 KVA Federal Circular 440 Volt  
500 KVA Federal Longitudinal 440 Volt

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### A. T. HENRY & COMPANY, INC.

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Liquidations - Bona Fide Auction Sales Arranged

Consulting Engineering Service  
Surplus Mfg. Equipment Inventories Purchased

### CHECK THIS PARTIAL LIST OF HIGH GRADE TOOLS

100 KVA Taylor Winfield portable spot welder, practically new  
50 KW Sciaky Dynatrol automatic cycle press type spot welder  
7 1/2" National high duty air clutch forging and upsetter  
4" National high duty upsetting and forging machine, late (2)  
3" 3/2" Ajax upsetting and forging machine, steel frame  
3" National high duty upsetter, air clutch  
3" Ajax upsetter, air clutch  
1 1/2" National upsetting and forging machine, hardened ways (2)  
9 16" National precision thread rolling machine, MD, late  
Economy Type R automatic threading or pointing machines, 1948 (2)  
36" Rockford upside universal shaper planer, mechanical, MD  
10 1/2" x 10 1/2" No. 3 Match & Merryweather cold saw, late, MD  
10' x 10" Racine hydraulic Shear-Cut metal saw  
No. 1-L Kane & Roach vertical type horizontal shaft bending roll  
No. 18 Kane & Roach straightening roll  
750 ton No. 3 National Maxipress, air clutch, new 1945  
60 ton Henry & Wright high speed dieing press  
50 ton U-56 Niagara steel frame solid knee punch press  
60 ton No. 600 B Perkins OBIT press, new 1950  
800 ton Model 2E48-800 Hamilton straight side single crank, air clutch  
250 ton Williams White & Co. four post upward working hydraulic press  
150 ton HPM Hydro-Power Fastraverse hydraulic press  
350 ton No. 18T Cleveland single crank double action toggle drawing press  
260 ton No. 795 1/2-72 Toledo double crank toggle drawing press  
200 ton 7-72 Bliss double crank straight side tiered frame press  
126 ton Model 60-D-66 Cleveland straight side double crank tiered frame single geared press  
600 ton No. 604 Toledo tiered frame knuckle joint coining press  
400 ton No. EG 54 Ferracite upward working coining press  
60 ton No. 605 General Flexible power and straightening press  
30" x 30" x 8" Cincinnati Hydro 2 rail, one right hand side head dual ford planer  
Economy type KK automatic bolt head shaving and pointing machine  
48" Newton two spindle continuous rotary mill  
Half Planetary thread and circular form milling machine

Ask for your list No. 206.

### MILES MACHINERY CO.

PHONE SAGINAW PL 2-3105  
2041 E. GENESEE AVE. SAGINAW, MICH.

W & W No. 2 Hyd. Tube Bender.  
Cinn. 6' x 1/4" Power Brake, New.  
Eastman 14" Comparator & gear anal.  
Gleason 3" Str. Bevel Gear Generator.

### D. E. DONY MACHINERY CO.

4357 St. Paul Blvd. Rochester 17, N. Y.

2000# Chambersburg Pneumatic Forging Hammer Late Type, Serial 20CH392L7.

4000 lb. Chambersburg Double Frame Steam Forg. Hammer

2500 lb. Erie Single Leg Steam Forg. Hammer

No. 7 Ajax Forging Press, 700-ton capacity

3-2-ton Denison Auto. Hopper Feed & Index Table Hydr. Multipress

25 Transformer and Generating Arc Welders

2500 lb. Model E Chambersburg Steam Drop Hammer, New 1944

6' x 10 ga. Cincinnati Squaring Shear 1/4" x 8" Pexto Gate Shear; 20" throat

4" National High Duty Upsetting & Forging Machine, air clutch, also one with regular clutch, also 1", 2", 3" air clutch

Williams White Bulldozers 5-ton to 300-ton

Landis Landmaco and other Landis Threading Machines

Single & Double End Punches

No. 3 Match & Merryweather Saw, with Saw Grinder

Conomatic, 4 Spin. Cap. 1 1/2" Rd.

**BOLT, NUT AND RIVET MACHINERY, COLD HEADERS, THREAD ROLLERS, THREADING MACHINES, TAPPERS, COLD BOLT TRIMMERS, SLOTTERS, HOT HEADERS AND TRIMMERS, COLD AND HOT PUNCH NUT MACHINES.**

### DONAHUE STEEL PRODUCTS CO.

1919 W. 74th Street, Chicago 36, Ill.

### REBUILT - GUARANTEED ELECTRICAL EQUIPMENT

#### COMPLETE PACKAGE MILL DRIVE IN STOCK

- (1)-800-HP., Whse. motor, 168 R.P.M., 710 VDC, gen. excited fields
- (2)-720-KW Whse. M-6 Set 600 710 VDC Diff. Comp. driven by a synchronous motor 900 R.P.M., 4000/2300-volt, 3 phase, 60 cycle
- (1)-Starting panel for syn. motor
- (1)-4 unit exciter set
- (1)-Set of variable voltage control

#### IDEAL REEL DRIVES

- (2)-600-HP. Allis-Chalmers mill motors, 600-VDC, 300 600 R.P.M., with a 1200-KW, 600-VDC Westinghouse M-G Set, 1750-HP. synchronous motor, 4160/2300-Volt, 3 phase, 60 cycle.
- (2)-275-HP. Westinghouse mill type motors, 230-Volt, 425/850 R.P.M., with 2 or 3-unit, 600-KW M-G Set, 250-VDC and 900-HP. synchronous motor, 2300-Volt, 3 phase, 60 cycle.

#### SPECIAL

1150 KW double armature Whse. Generator, 600 VDC, 900 R.P.M. separate excited fields, with 2250 HP, syn. motor, 2300/4000 volt, 3 phase, 60 cycle

#### MOTOR GENERATOR SETS

Qu.	KW	Make	RPM	D.C. Volts	A.C. Volts
5	1300	Al. Ch.	514	350/700	13800/4000/4160
5	1500	G.E.	514	250	2300/4000
1	1450	Whse.	900	600	2300/4000
2	1250	Al. Ch.	720	600	2300/4000
1	850	G.E.	720	210/350	2300
1	725	Whse.	900	800	2300/4000
1	500	Cr. Wh.	720	600	2300/440
1	500	G.E.	900	250	2300
4	300	Whse.	1200	125/250	2300
1	300	Al. Ch.	1200	250/300	2300
(3-unit)					
2	200	Whse.	1200	125/250	2300/440
2	150	Rel.	1200	125	2300/440
1	150	Whse.	1200	125/250	2300/440
1	150	G.E.	1200	250	4000/2300
1	100	Whse.	720	125/250	220
1	75	Whse.	1200	125/250	2300

### T. B. MAC CABE COMPANY

4302 Clarissa St., Philadelphia 40, Penna.

Cable Address Phone  
"Macsteel" Philadelphia, Pa. Davenport 4-8300

Compressor, 5HP Brunner 150# Tank Mounted  
Leveler, 3" x 30" Fessler Backed Up Type  
Metallograph, B&L Mills, 5" x 8" Camera  
Riveter, 50 Ton Hanna Hyd., 8" R x 16" G 10 HP  
Rolling Mill, 20" x 30" United 2H, RLR BG  
Rolling Mill, 6" x 8" Standard 04, RLR BG  
Rolling Mill, 6" x 5" Std Grading, RLR BG

### F. H. CRAWFORD & COMPANY

30 Church Street New York 7, N. Y.

## THE CLEARING HOUSE

- 1—28" x 40" HOT STRIP MILL, 2-high, reversing with 2500 HP D.C. motor, etc.
- 2—28" 3-HIGH ROLL STANDS with inlet, outlet and intermediate tables. Will produce 4" sq billets from 8" sq blooms in 6 passes. Includes bloom shear.
- 1—28" REVERSING BREAKDOWN MILL.
- 1—25" x 42" x 60" HOT STRIP MILL, 4-high.
- 1—28" PINION STAND, 2-high, modern design.
- 1—20" x 48" skin pass mill for strip, 2-high.
- 1—10" x 10" 2-HIGH COLD MILLS, combination pinion stand and gear set, extra forged steel rolls.
- 1—16" BAR MILL, 3-high, 4-stands, with speed reducer.
- 1—10" ROD MILL.
- 1—9" bar mill, 3-high.
- 1—MECHANICAL COOLING BED for bars, 120 ft. long x 11'6" wide, shuffle bar type.
- 1—COIL BUILD-UP LINE. Capacity strip 36" max. width by 250" max. thickness.
- 1—14" x 192" ROLL GRINDER with motors and controls.
- 1—44" ROLL LATHE, enclosed headstock, tailstock, turn rest, 20 HP 500/1500 RPM, 230 volts D.C. motor and controls.
- 1—ROLLER LEVELERS, McKay, rolls 80" face & 5 1/4" dia. with gear box and universal spindles.
- 1—ROLLER LEVELER, 42" McKay, backed-up.

- 1—STRETCHER LEVELER for sheets, 500,000 lb.
- 1—KANE & ROACH BAR AND ANGLE STRAIGHTENER, size 2-5 cap. 4" x 4" x 1/2" angles, 5" channels 2 1/2" bars.
- 2—KANE & ROACH BAR AND ANGLE STRAIGHTENERS, size 2-4 cap. 3" x 3" x 3/8" angles, 3 1/2" channels and 2" bars.
- 1—LOCOMOTIVE, 62 1/2 ton Diesel Electric.
- 2—UNITED HOT SAWS, 30", sliding frame.
- 1—BONNET BILLETEER, size "A" cap. 3" to 6" Squares.
- 1—UNITED 2-4 BAR SHEAR vertical open side.
- 1—PELLS BILLET AND BAR SHEAR cap. 7" round, 50 HP motor.
- 1—ROTARY SHEET TRIMMING SHEAR, capacity 112" x 3/8" plate.
- 1—192" x 10 GAUGE NIAGARA SQUARING SHEAR, little used.
- 1—156" x 1/4" SHEET SQUARING SHEAR.
- 1—SLITTING SHEAR FOR SHEETS, Mesta 92".
- 1—TANDEM SLITTING AND CUT-TO-LENGTH LINE, heavy duty, max. opening for 38" wide.
- 1—MORGAN INGT STRIPPER CRANE, 50' span, 200 tons capacity, 230 volts D.C.
- 1—ALLIANCE LADLE CRANE, 4 girders, 30 ton main hoist, 25 ton auxiliary, 55'5" span, 42' lift.

- 1—CORRUGATING MACHINE, Stamen, for 12" wide sheets, including several sets of removable dies.
- 1—DRAWBENCH, Mesta, oil-hydraulic, for 3 strands of bars 20" long.
- 2—PICKLING MACHINES for sheets, Mesta.
- 1—SCRUBBER AND DRYER for sheets 66" wide.
- 2—60-TON CAPACITY HOLDING FURNACES, electric, each with 7500 KVA transformer.
- 2—PACK FURNACES for hot sheet mills, 62" x 60", double chamber.
- 1—15-TON ELECTRIC MELTING FURNACE, top charge.
- 1—60" GALVANIZING LINE for sheets, with 2 roller levelers.
- 1—GAS PRODUCER PLANT, Wellman-Galusha.
- 1—3500 HP GEAR DRIVE, 514 to 80 RPM, 6.45 to 1 ratio.
- 1—1600 HP GEAR DRIVE, 514 to 87 RPM, 5.9 to 1 ratio.
- 1—1200 HP GEAR DRIVE, 333 to 94.6 RPM, 3.73 to 1 ratio.
- 1—3300 HP MOTOR, 11000 volts, 3 phase, 60 cycle, 514 RPM.
- 1—1200 HP MOTOR, 2200 volts, 3 phase, 60 cycle, 353 RPM.

## FRANK B. FOSTER, INC.

2220 Oliver Building, Pittsburgh 22, Pa.

cable: "Foster, Pittsburgh" Telephone ATLantic 1-2780

### RE-NU-BILT GUARANTEED ELECTRIC POWER EQUIPMENT DC MOTORS

Qu.	H.P.	Make	Type	Volts	RPM
1	2000	Elliot		475	220
1	2500	Elliot		600	200-300
1	1375	G.E.	MCP	415	1300
1	940	Whise	Q3	220	110-170
1	500	G.E.	MCF	250	400-800
1	450	Whise		550	415
1	300	G.E.	MPC	230	400
1	200	Whise	CB-207.4	250	850-1200
1	150	G.E.	CD B.B.	600	250-700
1	150	Cr. Wh.	6541	230	1150
1	125	Whise	SK-185	230	250-1050
1	125	Whise	SK-190	230	450-1000
1	100	Whise	SK-181	230	450-1000
1	60-100	G.E.	RF-17	250	450-900
1	75	Cr. Wh.	51B TEF	230	860
1	50	G.E.	MD-412 AE	230	250
1	40	Rel.	385F TFC		
2	30-40	Whise	SK-123.5	230	500-1500
2	30-40		B.B. D.P.	230	500-1500
3	30	G.E.	CDM-85 HR	230	2200

MG SETS—3 Ph. 60 Cy.					
Qu.	KW	Make	RPM	DC Volts	AC Volts
1	200-2400	G.E.	450	250-300	2300-1600
1	1750-2100	G.E.	514	250-300	2300-1600
1	2000	G.E.	500		
1	1500	G.E.	25 cy.	600	11000
1	1000	G.E.	120	600	6000-13200
1	750	G.E.	720	125-250	2300-1600
1	500	Whise	900	125-250	440
1	500	G.E.	900	250	440
1	300	G.E.	1200	250	2300
1	300	Whise	1200	275	440-2300
1	250	Whise	1200	275	2300
1	200	Whise	1200	250	2300
1	200	G.E.	1200	250	440
1	200	Cr. Wh.	1200	250	440

TRANSFORMERS					
Qu.	KVA	Make	Type	Ph.	Voltages
1	333.3	Whise	OISC	1	12800 x 2500
1	2000	A.C.	OISC	3	52000 x 2200
1	1500	G.E. auto.	HT	3	4000-4200-4400
1	1000	G.E.	OA FA	1	12800 x 250-460
1	825	G.E.	H	1	12800 x 160
1	750	G.E.	Pyranol	1	4800 x 83-25
1	500	Kuhl.	OISC	1	13200 x 6000
1	500	G.E.	OISC	1	13200 x 2500
1	500	G.E.	HSC	1	12800 x 600
1	500	G.E.	HF	3	4160 x 180-277
1	200	A.C.	OISC	1	2200 x 250-460
1	150	G.E.	OISC	1	52000 x 2500-10000

### BELYEA COMPANY, INC.

47 Howell Street, Jersey City 6, N. J.

### GET CASH NOW

for your new surplus motors, controls and transformers!

NEW MOTORS AVAILABLE:

Over 5,000 new motors, in stock, from 1/4 HP to 200 HP. Special low prices.

Write, wire or phone collect!

**AJAX ELECTRIC MOTOR CORP.**  
P.O. Box 262, Rochester, N.Y.  
Long Distance Phone LD. 132



### TOTAL OF 17,500-KW IN M.G. SETS

5—3500-KW, 3 Unit, Allis-Chalmers, Motor Generator Sets. Each consisting of:  
2—1750-KW, 250/350 Volts parallel, 500/700 Volt series, 514 RPM, 5000 Amp., type HCC, rated continuous at 40 Deg. C. Allis-Chalmers DC Generators with Class B Insulation, separately excited, direct connected in the center to:  
1—5000-H, 3730-KW, 13800 Volts (6900 volts), 3 Phase, 60 cycle, 514 RPM, 162 Amps., Allis-Chalmers Synchronous Motor with Class B Insulation, rated continuous at 40 Deg. C. Rise.  
Each set equipped with a 40-KW exciter for synchronous motor fields, and a 10-KW exciter for generator fields, both 250-VDC at 514 RPM.

All mounted on a structural steel base approximately 27' long x 11' wide. These Units are of the very latest type and design—condition excellent—were used only a short time—AC and DC Switchgear available. For any additional information and price, please contact one of the following dealers closest to you:

#### T. B. McCabe Company

4300 Clarissa Street, Philadelphia 40, Pa.  
**Moorhead Electrical Machinery Co.**  
120 Noblestown Road, Oakdale (Pittsburgh District) Pennsylvania  
**Brazos Engineering Co., Inc.**  
P. O. Box 9114, Houston, Texas  
**Duquesne Electric & Mfg. Co.**  
6428 Hamilton Avenue, Pittsburgh 6, Pa.

### RADIAL DRILLS

CARTON MODEL 5A 10'-26". Power Head and Column Clamping, Power Head Traverse, Power Elevation. Motor on Arm. New 1942.

AMERICAN 7'-17" HOLE WIZARD. Power Clamping, Power Elevation, Power Head Traverse. Motor on Arm. New 1945.

Both machines in excellent condition

### THE MACDELL CORP.

846 W. Lake St. Chicago 7, Illinois  
MONroe 6-7714

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Dealers in new and used OET Cranes and Structural Steel Buildings.

Send us your inquiries.

### MORGAN GANTRY CRANE

15-ton capacity, 48'0" span center to center of ground rails, 19'2" overhang each end, 86'4" bridge length, 72'0" full hook travel, 30' lift, wired for 220/440-V., 3 phase, 60 cycle, with G.E. motors and control, enclosed gears throughout. Hoist and bridge motors 50-HP each, trolley 7 1/2-HP, Hoist 38 F.P.M., bridge 200 F.P.M., complete and in A-1 condition throughout. All conductor materials included. Still erected, available for immediate inspection. SAVE \$35,000.00 over a NEW CRANE and get IMMEDIATE SHIPMENT.

### M.E.T. Equipment and Construction Co.

4310 Clarissa Street  
Philadelphia 40, Pennsylvania  
Phone DA. 4-8300

One Type 6 4233 CU Hevi-Duty Bill Furnace and Equipment. 125 KW, 440 V 3 Phase 60 Cycle with Inconel Retorts 50" ID x 70" High. 2100°F Operating Temperature. New March 1955.

One 240 KW, 3 Phase 60 Cycle, 440 Volt Continuous Special Atmosphere Wire Mesh Belt Conveyor Type Electric Heating Furnace. Inside Clearance 18" High x 4'3" Wide, 2040°F Operating Temperature. New October 1955.

One 3000 CFH Electric Furnace Co. Ammonia Dissociator Unit Complete with Controls. New 1955.

These almost new furnaces are available at considerable savings. For further information write

BOX G-58R

Care The Iron Age, Chestnut & 56th Sts., Phila. 39

### BEST BUY OF THE WEEK!

Thread Rollers  
Waterbury Farrel 240 Special  
—3 1/2" x 24" Stud Thread Roller  
—(dbl. end model)

**STROM**

**MACHINERY CORP.**  
1826 Summer St., Hammond, Ind.



## Used Steel Mill Equipment For Sale

1—36" Paxon Slitting Line, complete with pay-off reel, 36" Paxon Slitter, 16" x 40" special Paxon Drum Coiler, Reliance M-G Set, Paxon Scrap Baler.

1—Band Saw Steel Processing Line, consisting of: Pinch rolls, hardening furnace, quench tank, draw furnace, cooling tank, draw coiler, coil conveyor, edge grinder, surface grinder with three lines as following, brinell conveyor, grinder conveyor line and inspection line, coil box, and coiler. This is practically new equipment.

1—Halden Cut-off Line, consisting of: Coil Box, motor driven Feed rolls, Looping Table, Halden Leveler & Shear, motor driven, motor-generator set, Runout table.

1—2-Hi Rolling Mill, 26" x 72" with entry conveyor, 200 HP, A.C. motor & Fawcus gear reducer, exit conveyor and Leveler.

1—3500 HP, Mill Drive, output speed 79.8 RPM; consisting of 3500 HP Allis Chalmers Motor, AC, 3/60/11,000 volt/ 514 RPM, Gear Reducer, Lewis, helical 3500 HP.

1—2500 HP, Mill Drive: motor, G.E. 3/60/2200 v/ 240 RPM, Gear Reducer "United" 7.731 to 1 ratio, 2500 HP.

1—1750 HP, Mill Drive: motor, Westinghouse, 1750 HP, 3/60/2200 v/ 234 RPM; Gear Reducer Falk, 1750 HP, ratio 8.15 to 1.

1—Pipe Forming Mill, consisting of Forming section, capacity 4" to 10" welded pipe, welding section, straightening section hydrostatic test machine and 90' chain conveyor.

1—60" McKay leveler, 17 roll backed-up, rolls & back-up rolls 2 1/2" dia.

1—44" Roll Lathe, Hyde Park, 22' bed, 12'6" between centers, 22 HP, Motor, 230 volt DC.

*Lou F. Kinderman*

P. O. BOX 182

NILES, OHIO

OLympic 2-9876

### IMMEDIATE DELIVERY BRAND NEW CYRIL BATH (STURDYBENDER)



#### POWER PRESS BRAKES

- #100- 8 8" x 3/16" 10' Bed
- #100-10 10" x 8 GA. 12' Bed
- #120-10 10" x 3/16" 12' Bed
- #150- 8 8" x 5/16" 10' Bed
- #150-10 10" x 1/4" 12' Bed

Purchasers of Cyril Bath Brakes are entitled to services of a factory representative to assist and supervise installation, and instruct personnel in operation and maintenance. NO CHARGE FOR THIS SERVICE.

#### PRESS & SHEAR MACHINERY CORP.

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WILL LEASE WITH OPTION  
TO PURCHASE, OR  
WILL FINANCE OVER LONG TERM

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SURF. COMB. 3 Row Push. Carb. Rad. Tube.  
80" W. 29" L. 20" H. Trays 26" x 26".  
SURF. COMB. 3 Row Push. Draw. Recirc.  
80" W. 29" L. 20" H. Trays 26" x 26". 1250°F.  
HOLCROFT, Pusher, Clean Hard, Gas Rad.  
Tube. 28" W. 21" L. 18" H. 1700°F + Endo.  
Gen. Trays 15" x 24".  
HOLCROFT, Pusher, Carb. 2 Row, Gas Rad.  
Tube. 45" W. 37" L. 18" H. 1750°F + Endo.  
Gen. Trays 16" x 20".  
HOLCROFT, Pusher, Draw. Gas. Recirc. 5'6"  
W. 36" L. 6'5" H. 1250°F.  
HOLCROFT, Pusher, Draw. Gas. Recirc. 5'6"  
W. 16" L. 28" H. 1250°F.  
AMER GAS Rotary Refractor, Mod. 28. 15" Dia.  
x 48" deep. 1850°F.

PAPESCH & KOLSTAD, INC.  
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## Eastern Rebuilt Machine Tools

THE SIGN OF QUALITY—THE MARK OF DEPENDABILITY

#### ENGINE LATHES

14" x 54" centers Reed Prentice Geared Head, m.d., late  
16" x 28 3/4" centers Hendey Yoke Head, m.d., taper  
16" x 54" centers Cincinnati Tray Top, m.d., late  
16" x 29 1/2" centers Lodge & Shipley Selective Head, m.d.  
16" x 29 1/2" centers Monarch Geared Head, m.d.  
16" x 30" centers American High Duty, m.d.  
16" x 30" centers Monarch Model CY Tool-makers, m.d.  
16" x 30" centers Monarch, m.d., taper  
16" x 30" centers Monarch Model CW, m.d.  
16" x 36" centers Hendey Geared Head, m.d.  
16" x 102" centers Lehmann, m.d.  
16" x 102" centers American High Duty, m.d.  
16" x 30" centers Reed Prentice, m.d.  
16" (actual swing 16 1/4") x 52" centers Monarch, m.d., taper  
16" x 54" centers Monarch, m.d., taper  
16" x 55 1/2" centers Monarch, m.d.  
18" x 30" centers American, m.d., 8 speed  
18" x 39" centers Groves-Klusman, m.d.  
18" x 48" centers Lodge & Shipley, m.d.  
18" x 49" centers Lodge & Shipley, m.d.  
18" x 51" centers American Geared Head, m.d.  
18" x 51" centers Hendey Geared Head, m.d., taper

18" x 54" centers American, m.d., Timken  
18" x 60" centers Cincinnati Tray Top, m.d.  
18" x 72" centers Cincinnati Tray Top, m.d.  
18" x 106" centers (110" centers tailstock overhang) American, m.d.  
19" x 48" centers LeBlond Geared Head, Timken, m.d.  
19" x 68" centers LeBlond Geared Head, m.d.  
20" x 46 1/2" centers Lodge & Shipley, m.d.  
20" x 48" centers Boye & Emmes, m.d.  
20" x 55" centers Groves-Klusman, m.d.  
20" x 70" centers American, m.d., taper  
20" x 72" centers Boye & Emmes, cone, motorized  
20" x 72" centers Boye & Emmes, m.d., taper  
20" x 77" centers Sidney Geared Head, m.d.  
20" x 120" centers LeBlond, m.d., 1944  
20" x 168" centers Boye & Emmes, m.d.  
21" x 42" centers LeBlond, m.d., taper  
24" x 51 1/4" centers Lodge & Shipley, m.d., taper  
24" x 75 1/4" centers Lodge & Shipley, m.d.  
24" x 84" centers Boye & Emmes, cone  
24" x 84" centers LeBlond, m.d., taper  
24" (actual swing 24 1/2") x 94" centers American, m.d.  
24" raised in sand to swing 32" x 192" centers New Haven, cone, taper

We carry an average stock of 2,000 machines in our 11 acre plant at Cincinnati. Visitors welcome at all times.

### THE EASTERN MACHINERY COMPANY

1002 Tennessee Avenue, Cincinnati 29, Ohio  
MEIrose 1241 "TWX" CI 174 CABLE ADDRESS—EMCO

### FOR SALE COMPLETE BAR & ROD ROLLING MILL IMMEDIATELY AVAILABLE

Suitable for Rolling Steel or Copper  
billets down to bar or rod sizes,  
including hotbed, shears, and rod coiler.  
STILL SET-UP, REASONABLY  
PRICED FOR IMMEDIATE SALE  
NATIONAL MACHINERY EXCHANGE  
126 Mott St. New York 13, N. Y.  
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### CONVEYOR FURNACES

2—Holcroft Electric Processing Furnaces, 24" Roller Conveyor type, 76" long 2000°F with 25 KVA Transformers, Reactors, Control Panels, etc. Excellent Condition. Built 1947. Attractively Priced.

#### BRILL EQUIPMENT CO.

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## UNIVERSAL MACHINERY & EQUIPMENT CO.

#### MELTING FURNACES

3 KW AJAX Spark Gap Converter  
20 KW AJAX Melting Unit  
50 KW INDUCTION FURNACE  
250 lb. LECTROMELT Arc Melting Furnace  
1 1/2 Ton LECTROMELT Arc Melting Furnace  
1500 lb. HERCULT Arc Melting Furnace

#### SPECIAL

5 Ton Hydraulic Trip Charge SWINDELL—Like New  
HEAT TREAT FURNACES  
DESPATCH pit-type gas hardening furnace  
1—Gas Fired, 5'6" x 8' I.D. Pit  
1—L.A.N. 25 KW Homocarb Furnace  
1—L.A.N. 75 KW, 25" x 48" Electric Pit

#### CLEANING EQUIPMENT

15" Cont. AMERICAN Tumbler, 4 tons per hour  
36" Cont. AMERICAN Tumbler, 15 tons per hour  
48" x 42" WHEELABRATOR w/ skip loader  
48" x 48" WHEELABRATOR w/ skip loader  
PANGBORN Shot Blast Machine, 5 Wheel Type

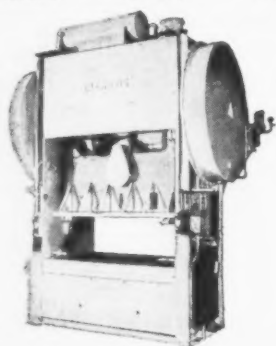
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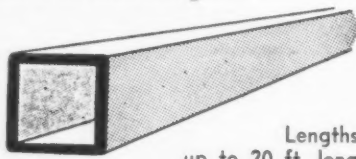
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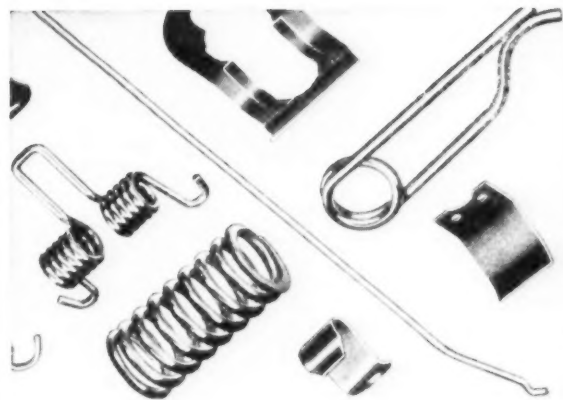
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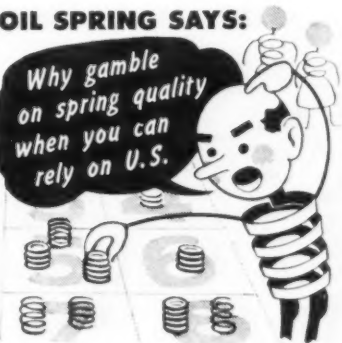
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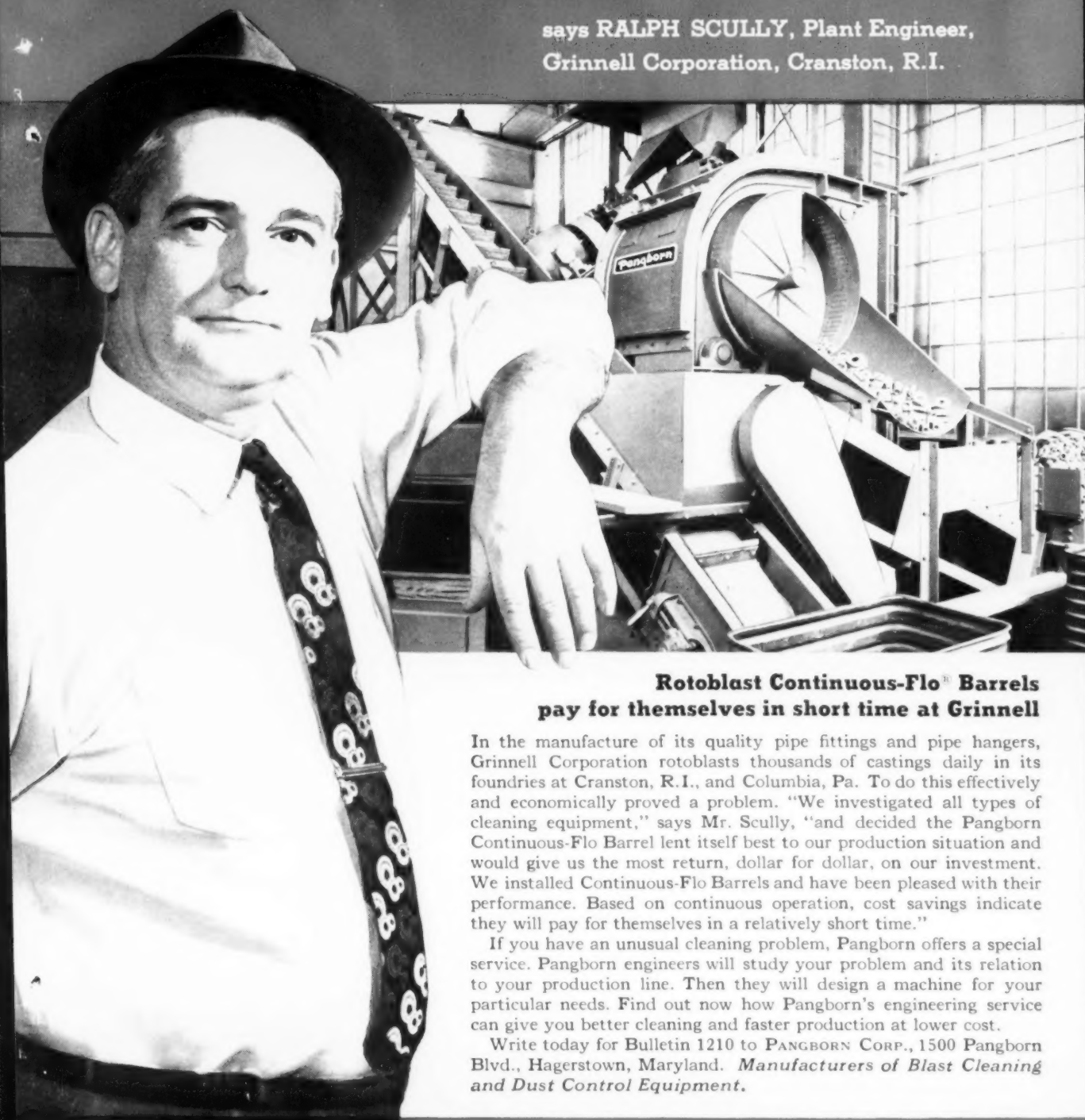
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